



FIG. 2

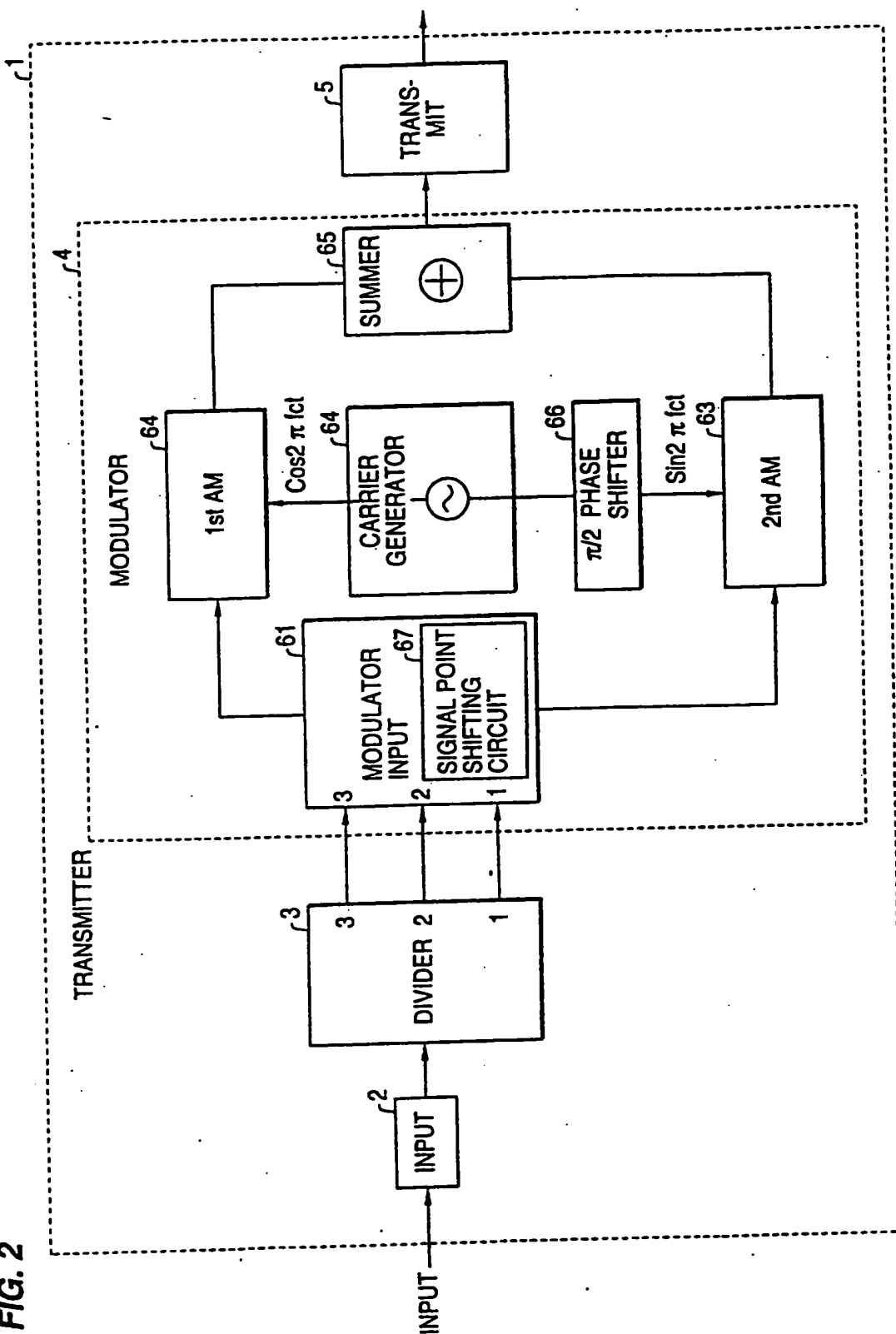




FIG. 3

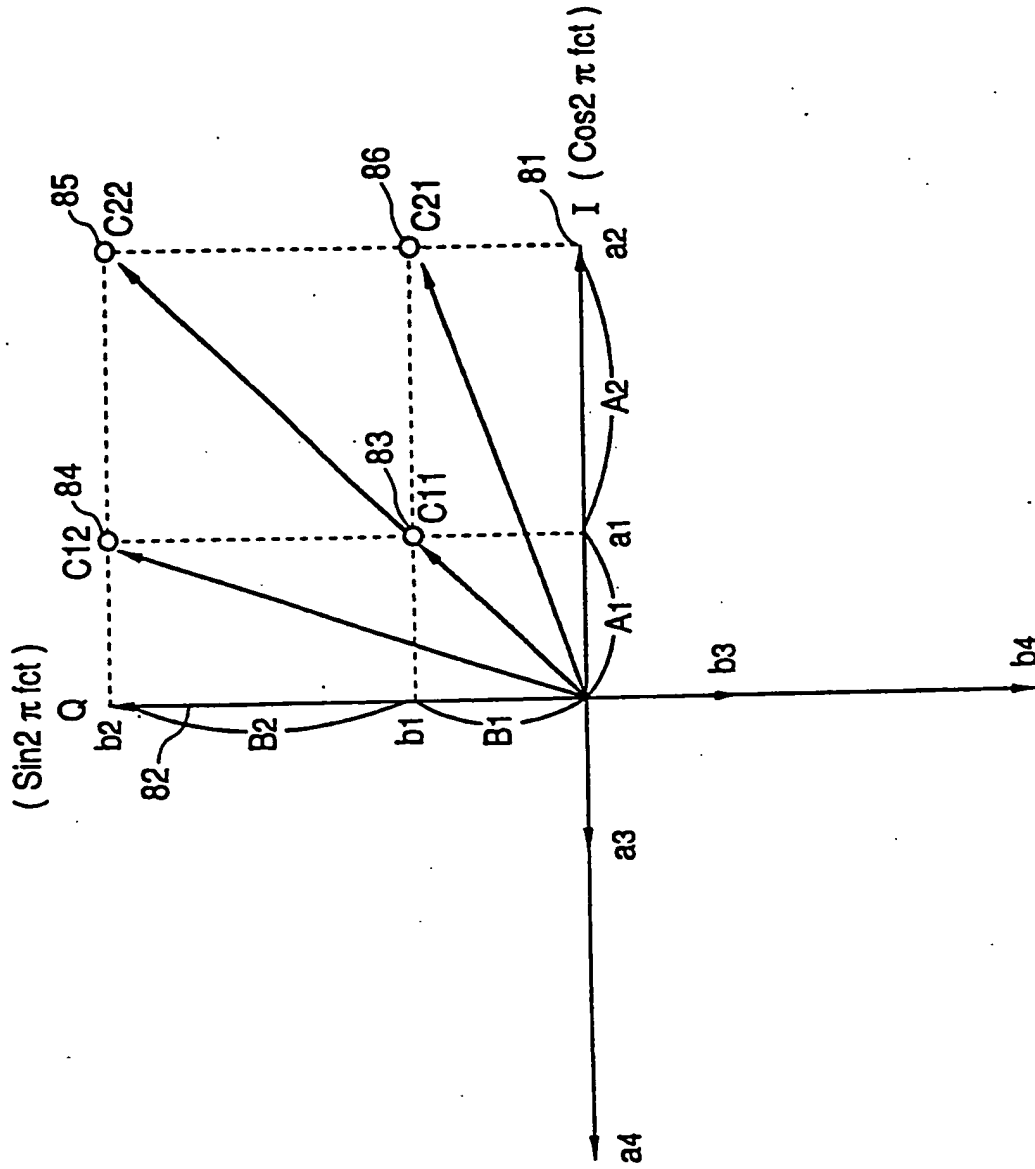


FIG. 4

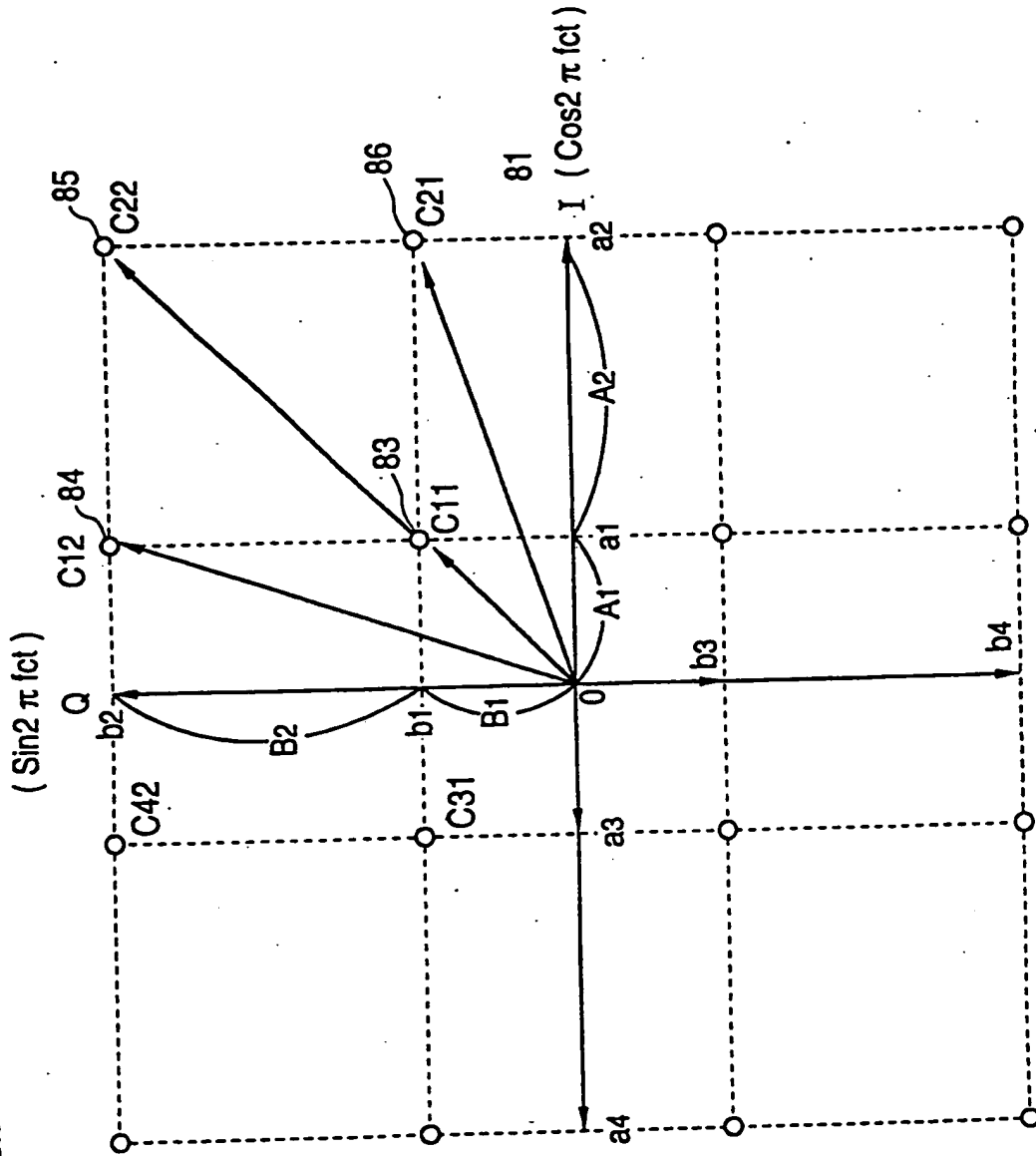




FIG. 5

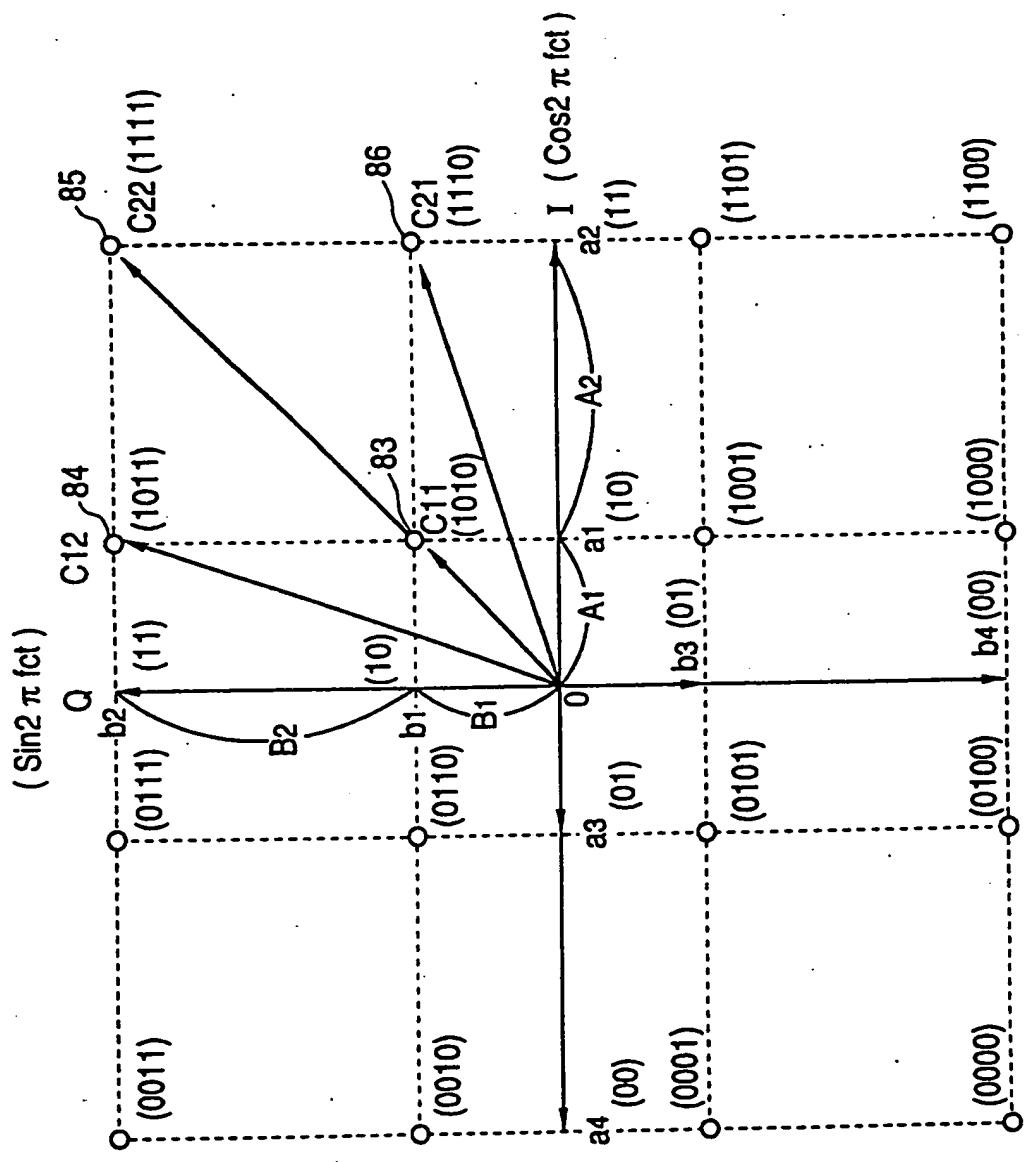
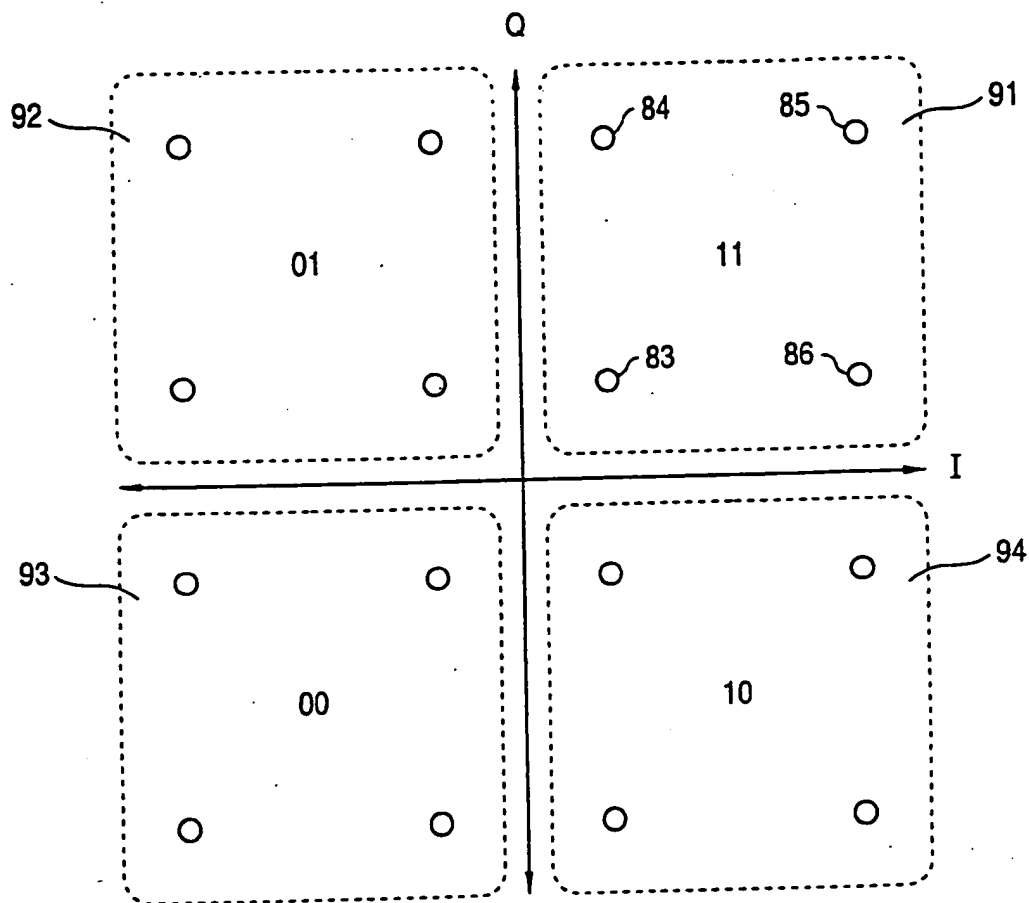




FIG. 6



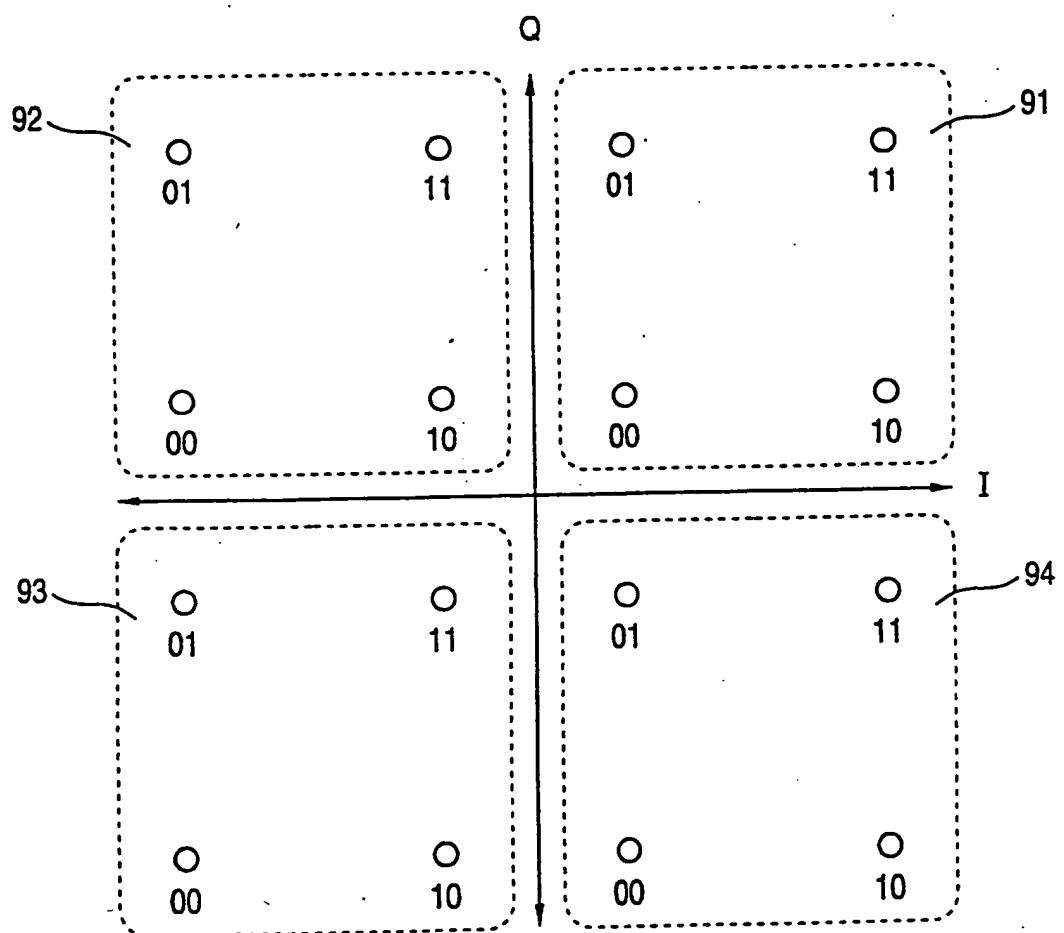
**FIG. 7**



FIG. 8

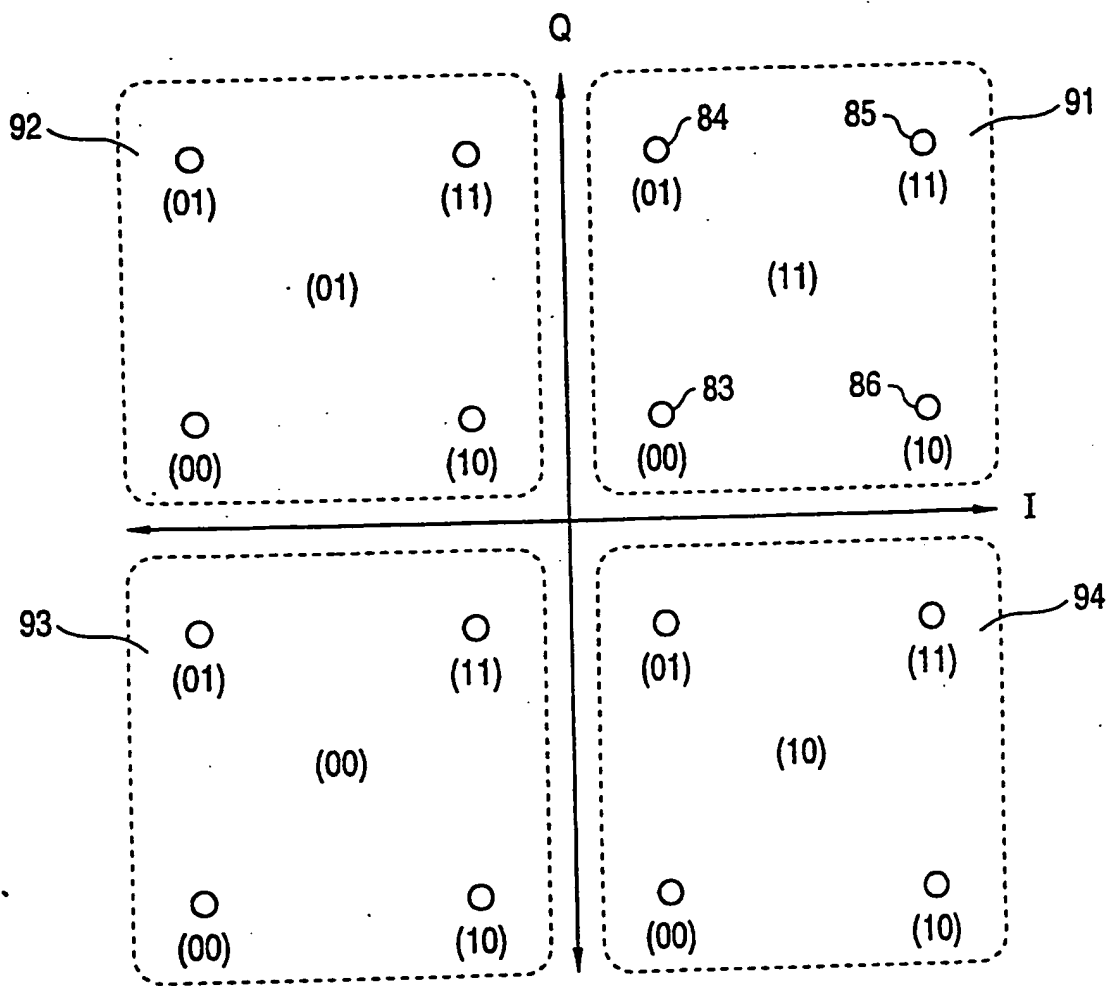






FIG. 9

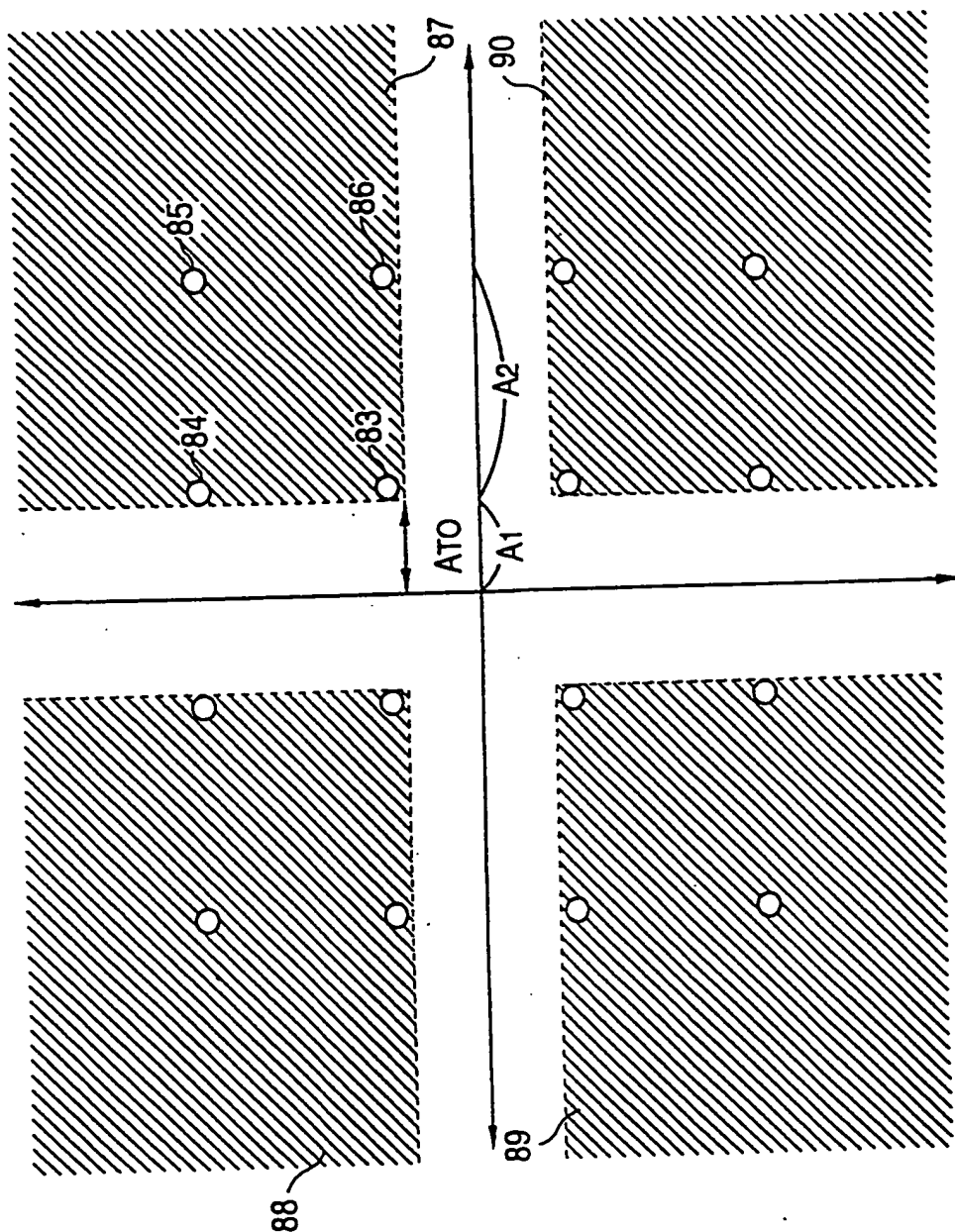




FIG. 10

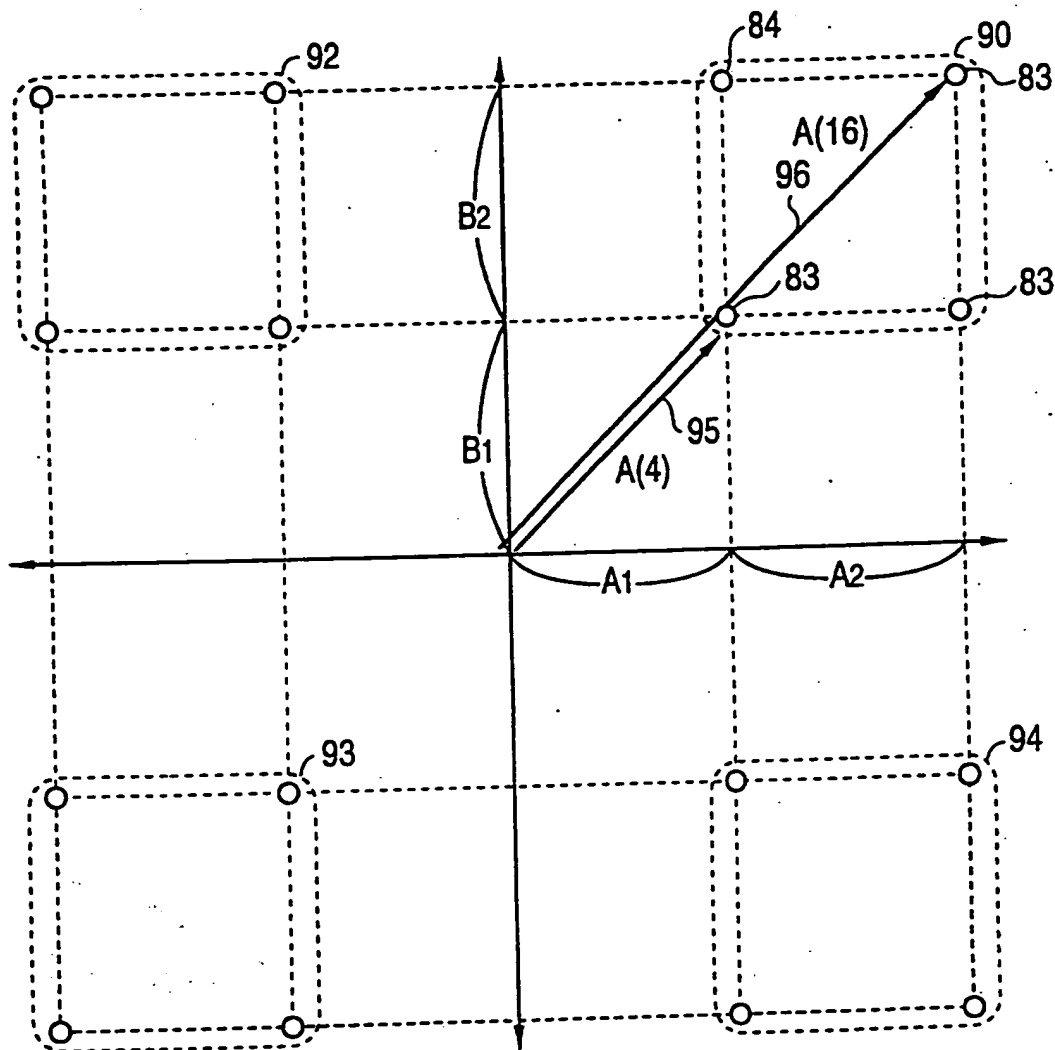
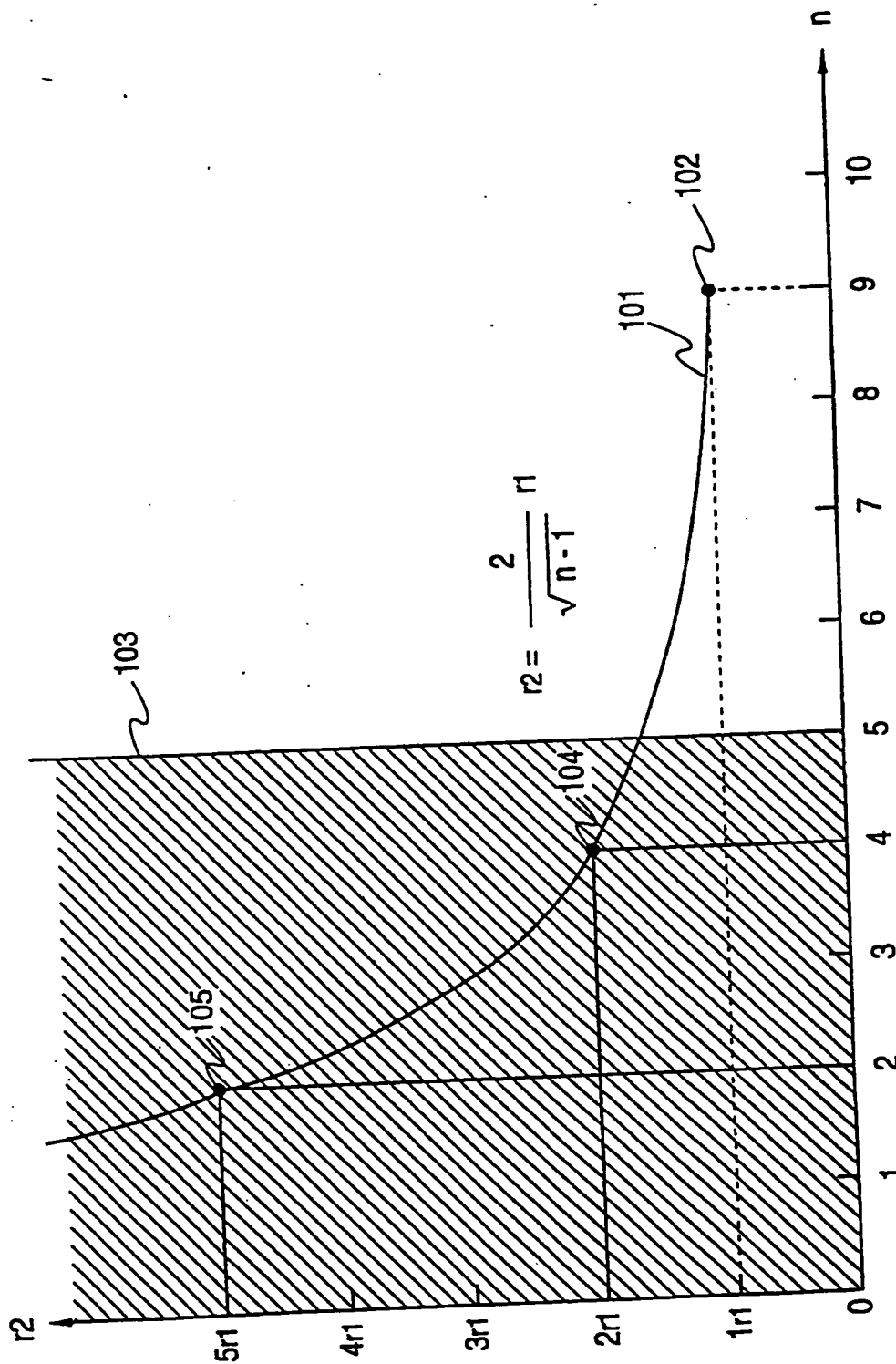




FIG. 11





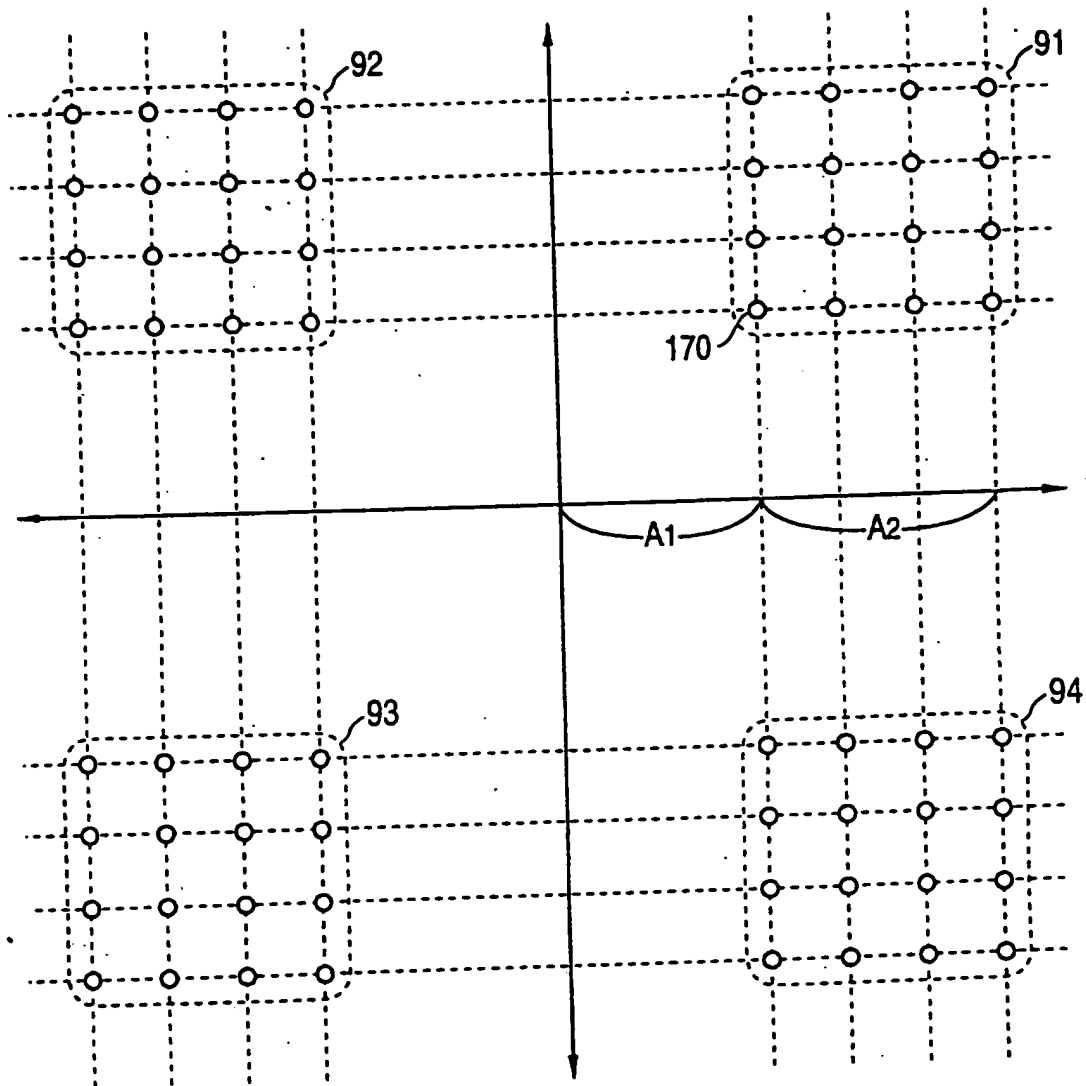
U.S. Patent

Feb. 4, 1997

Sheet 12 of 178

5,600,672

FIG. 12





U.S. Patent

Feb. 4, 1997

Sheet 13 of 178

5,600,672

FIG. 13

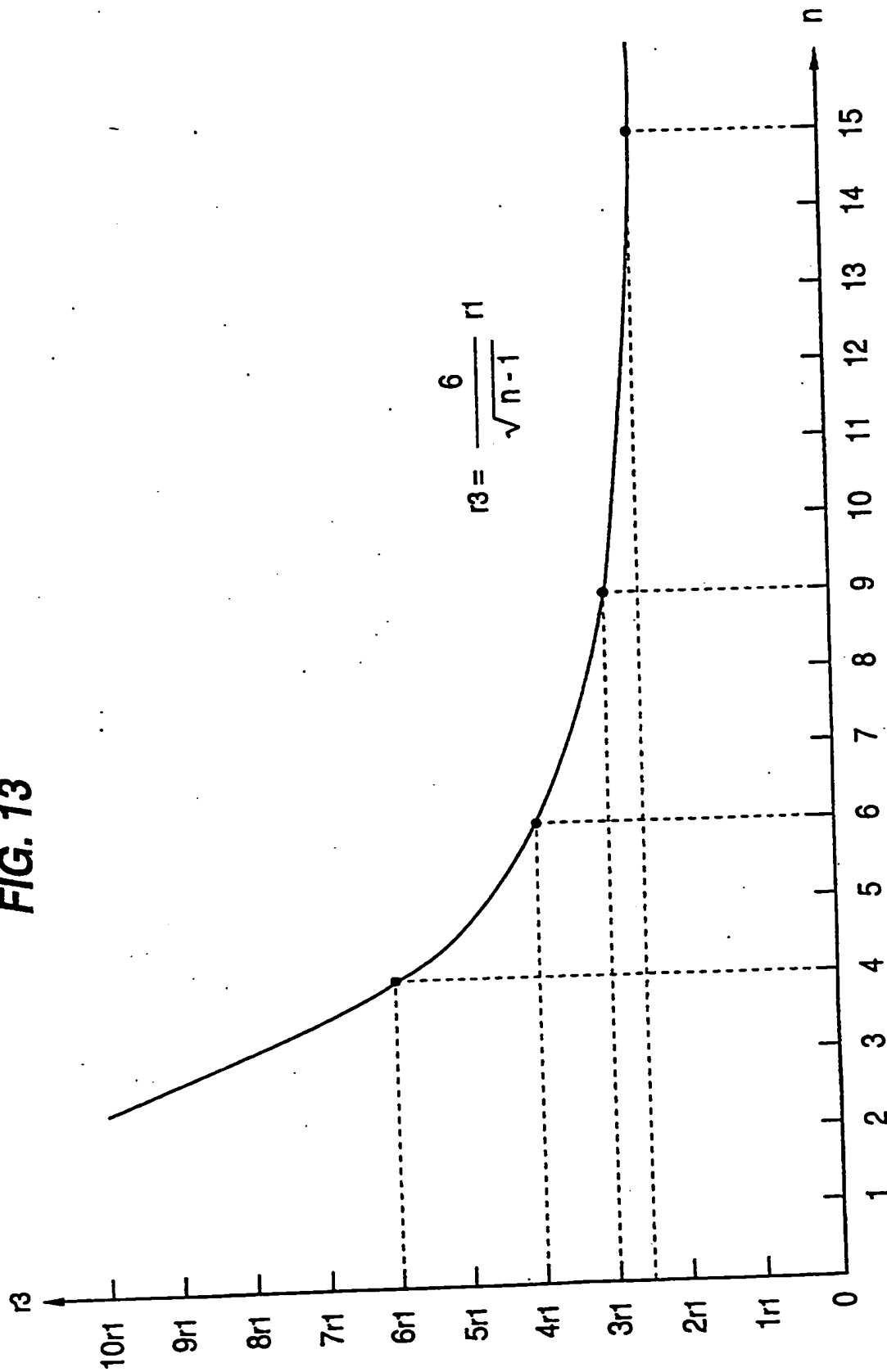




FIG. 14

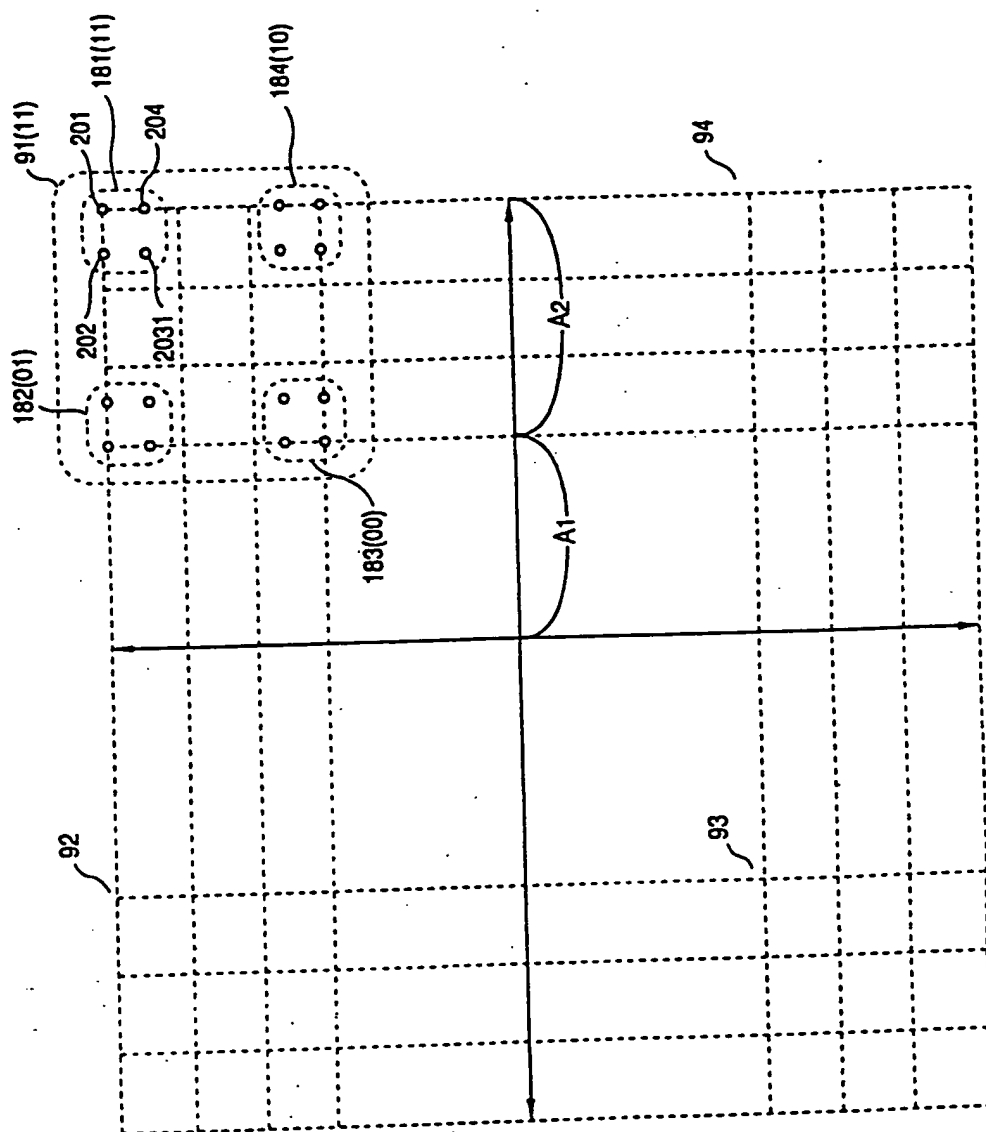




FIG. 15

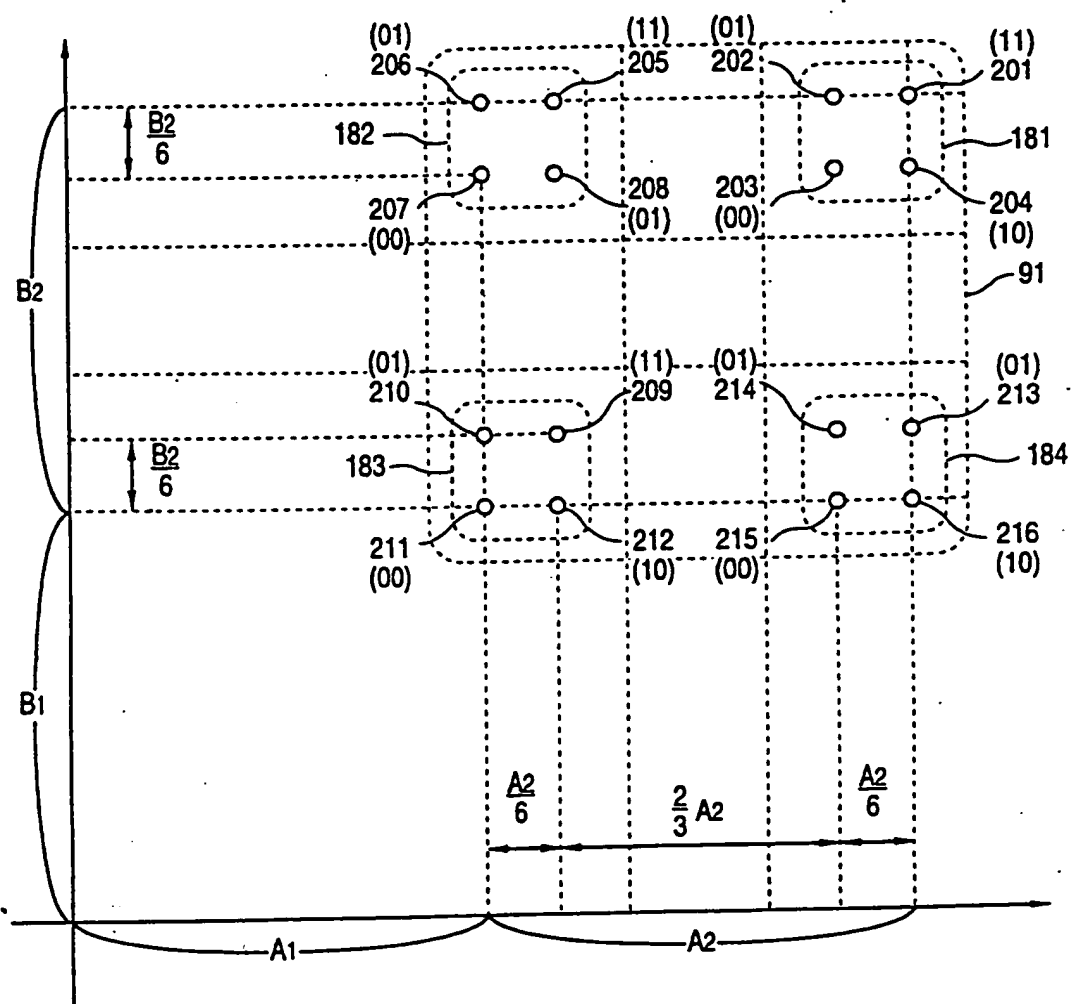




FIG. 16

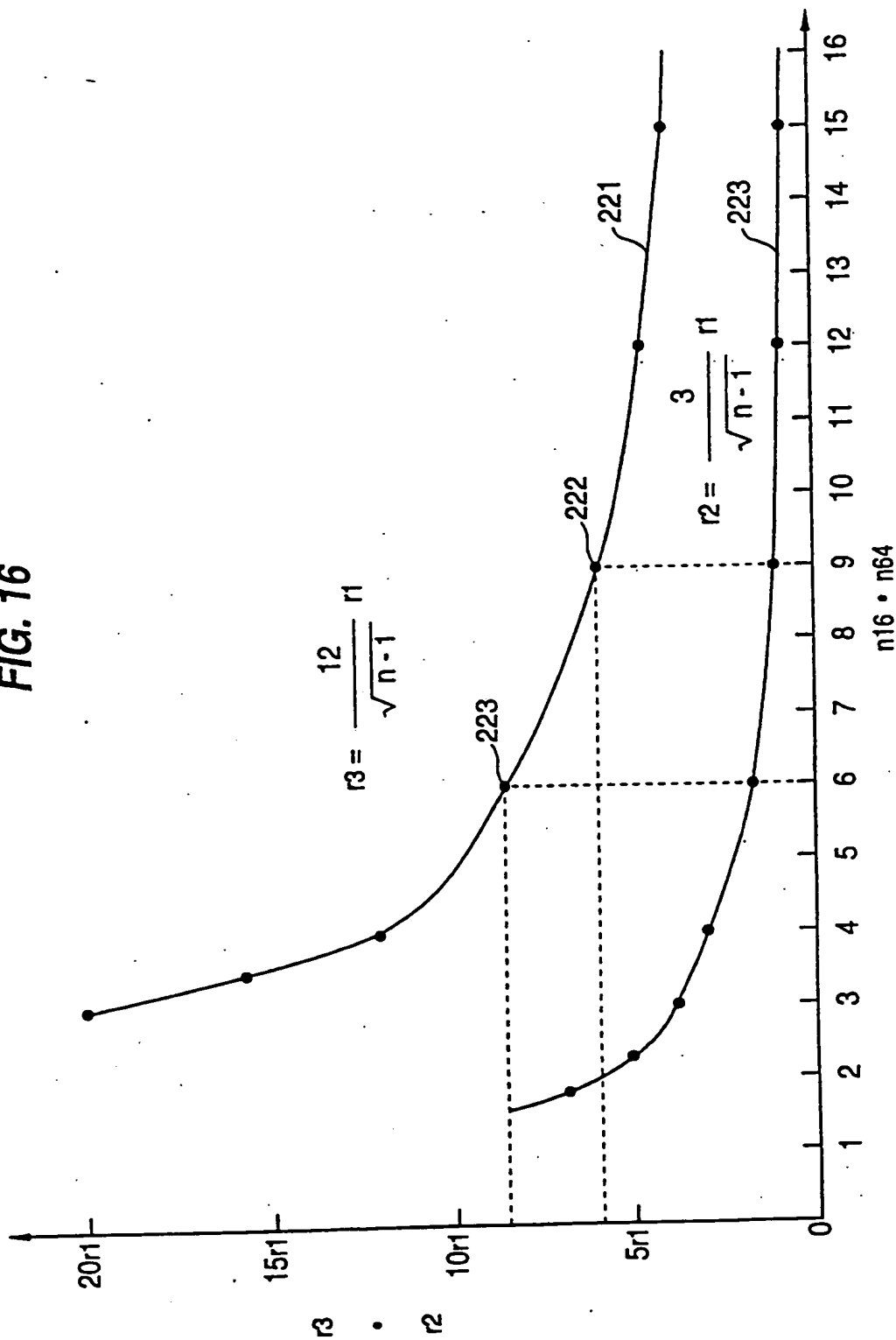






FIG. 17

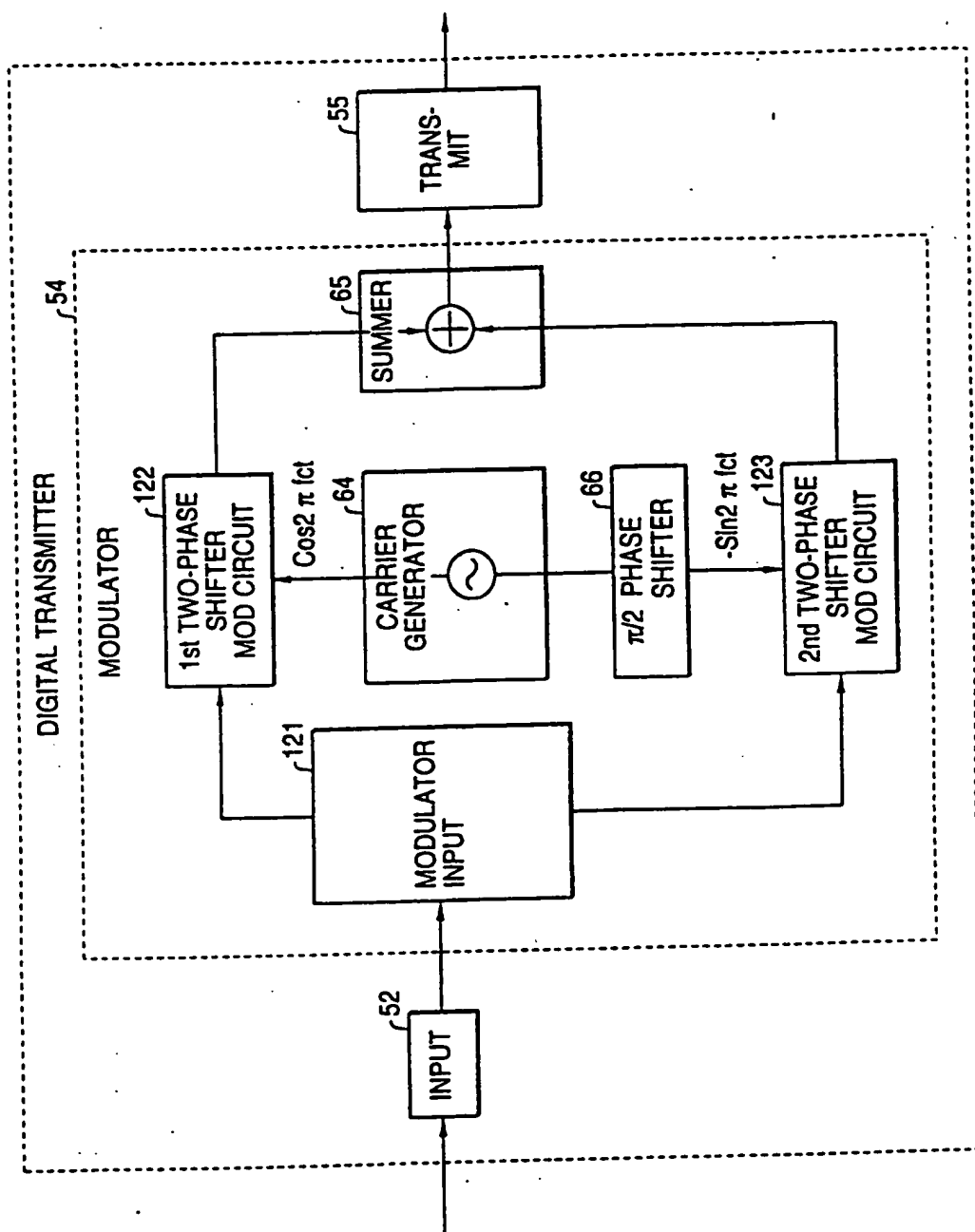




FIG. 18

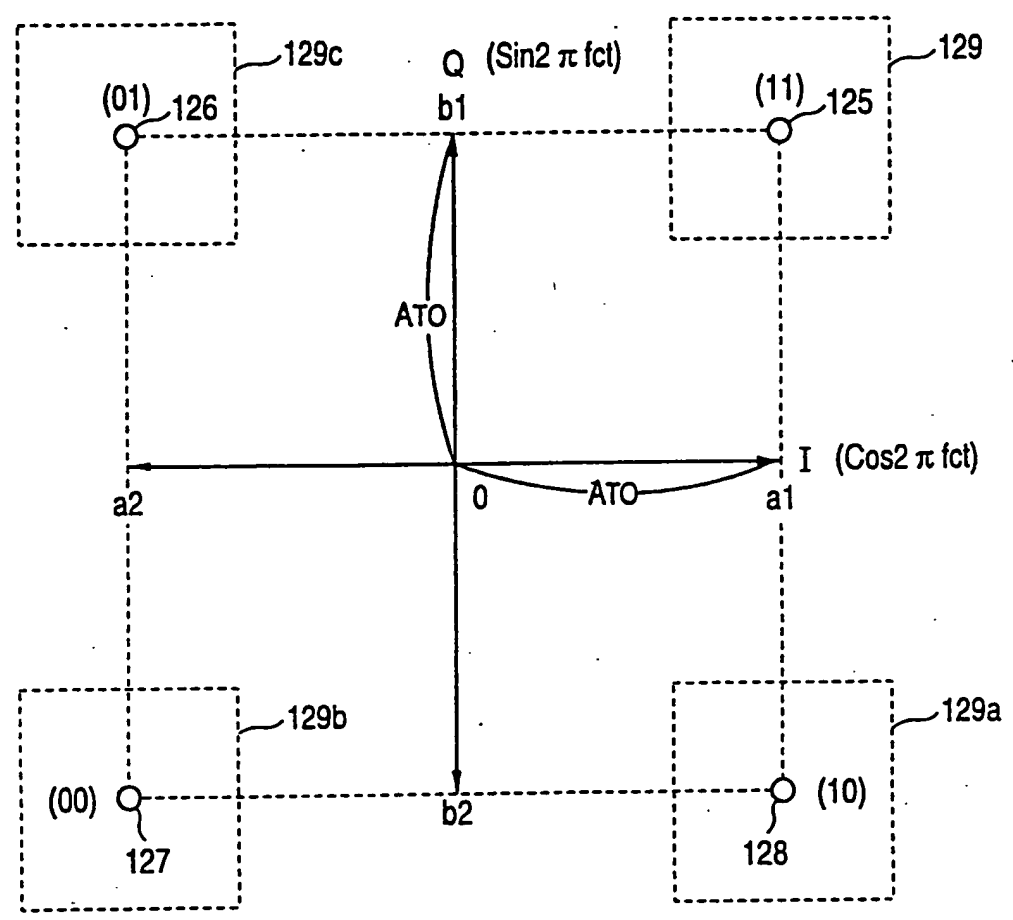




FIG. 19

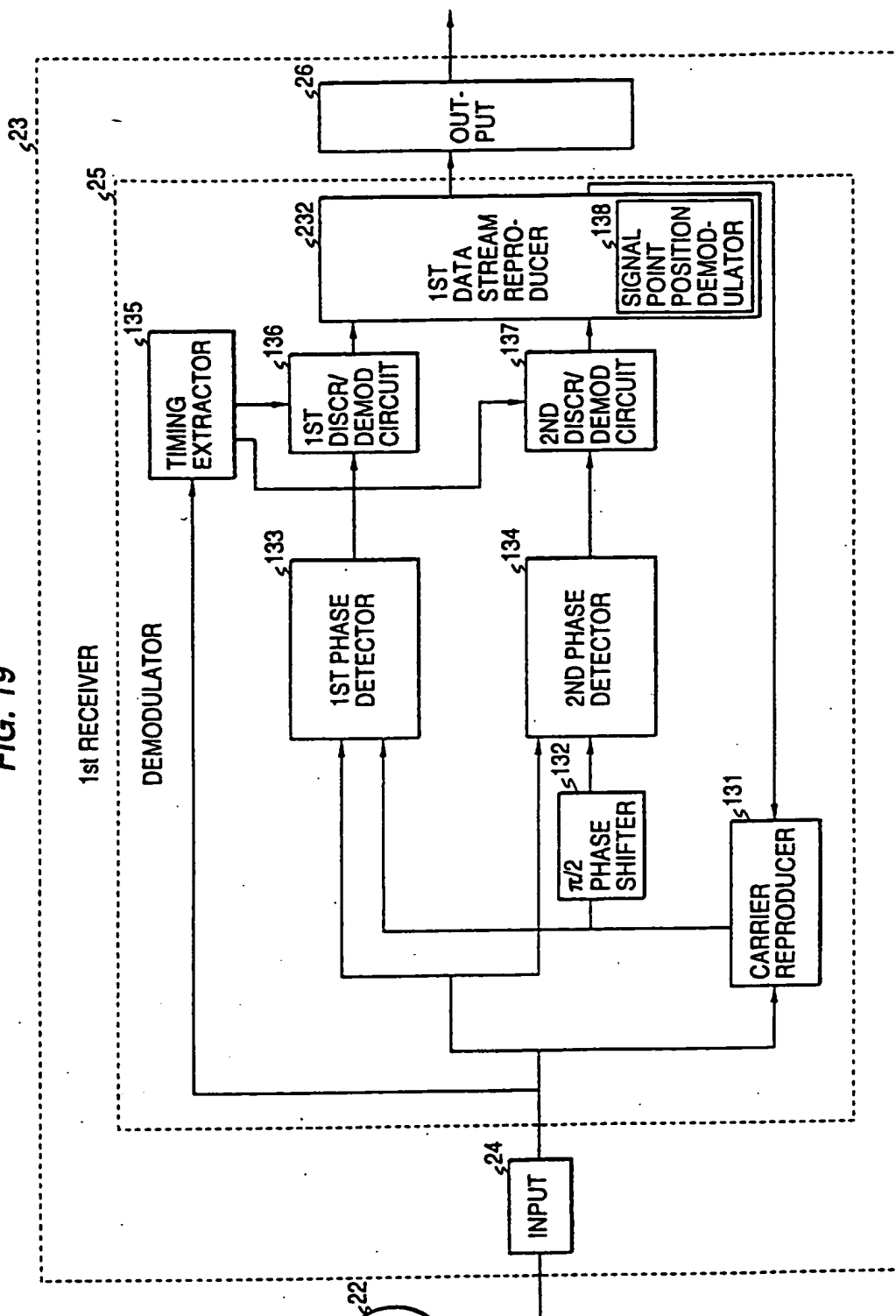




FIG. 20

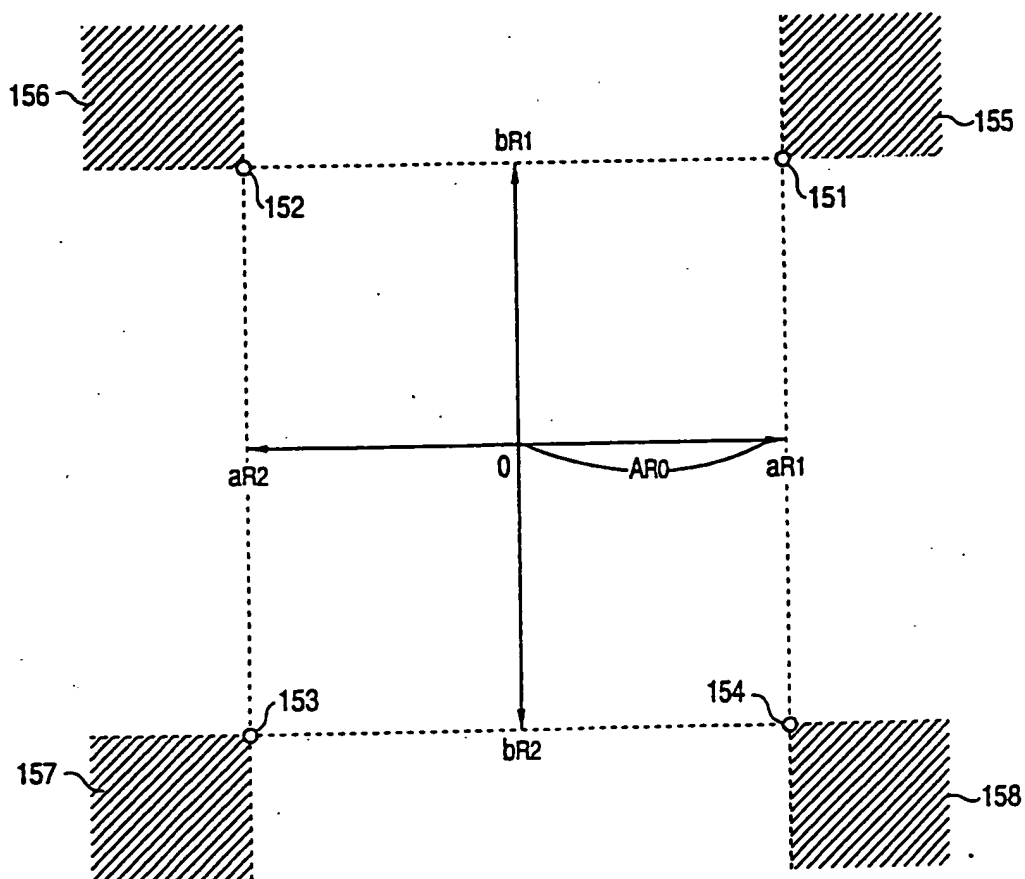




FIG. 21

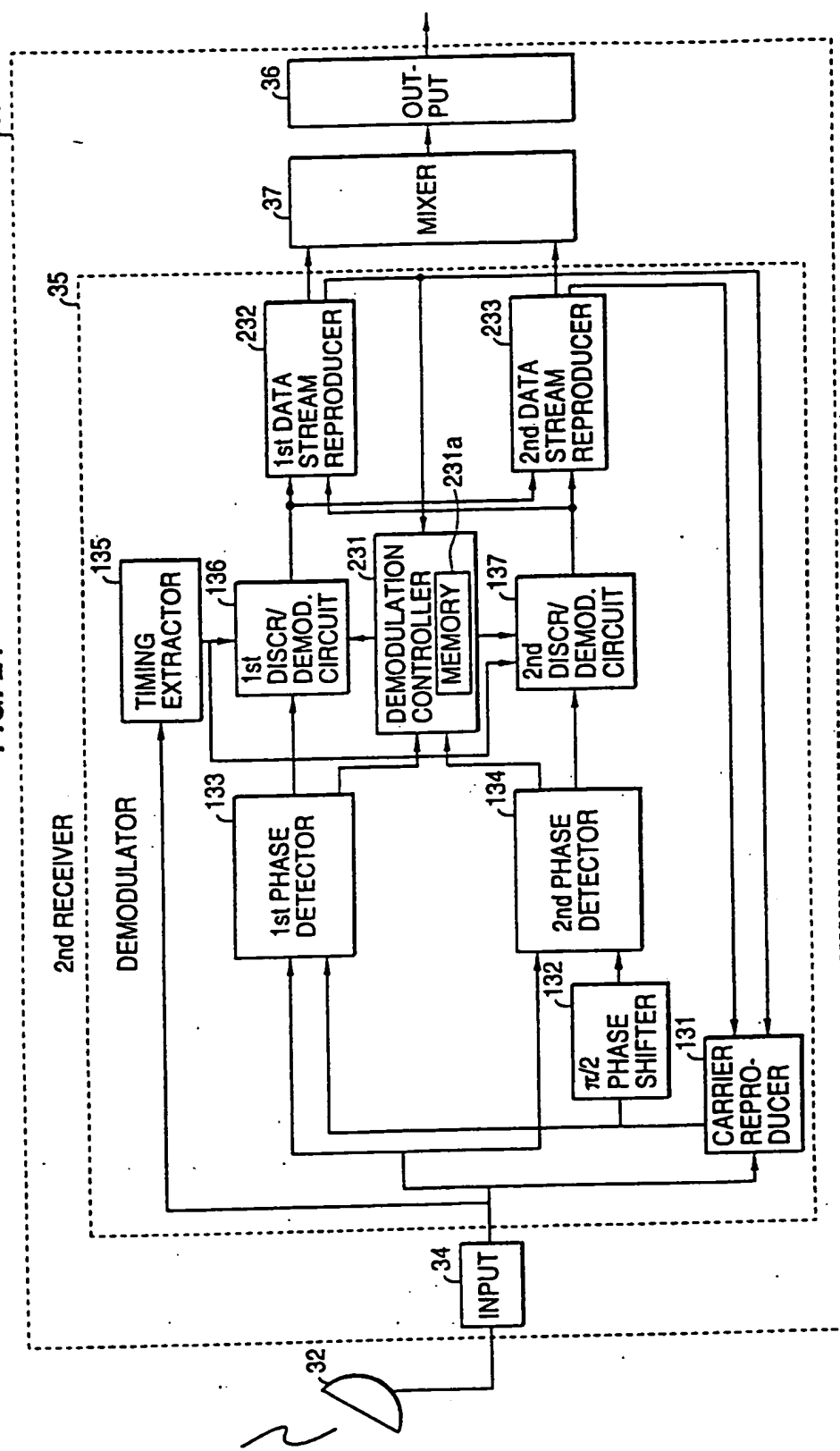




FIG. 22

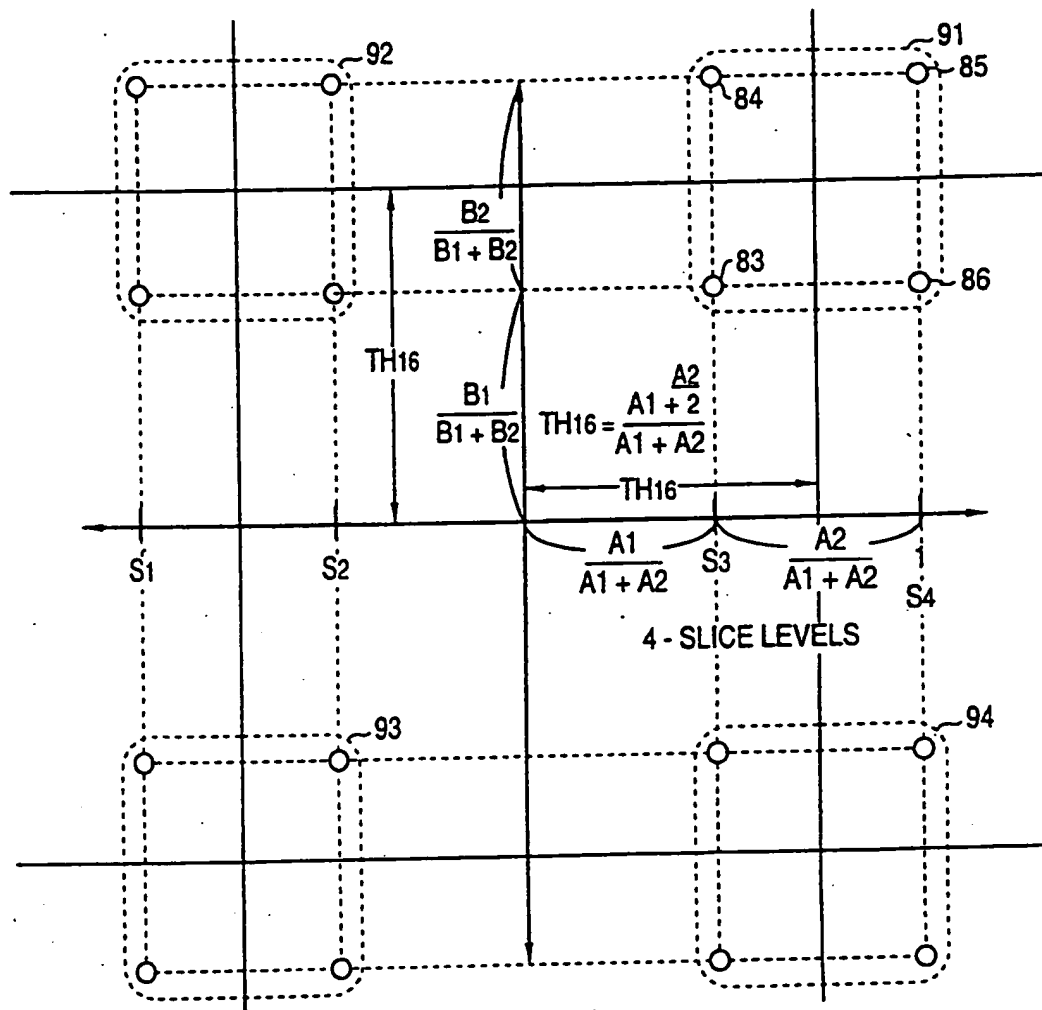




FIG. 23

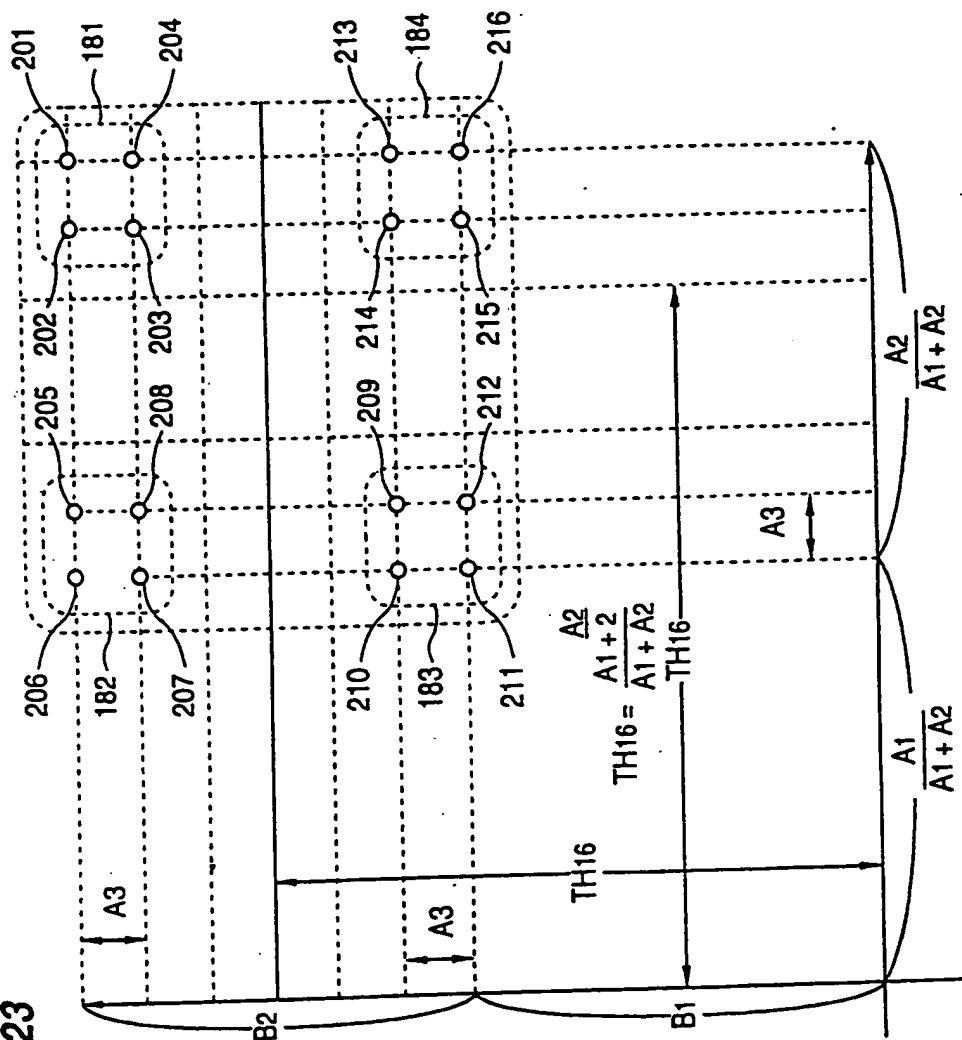
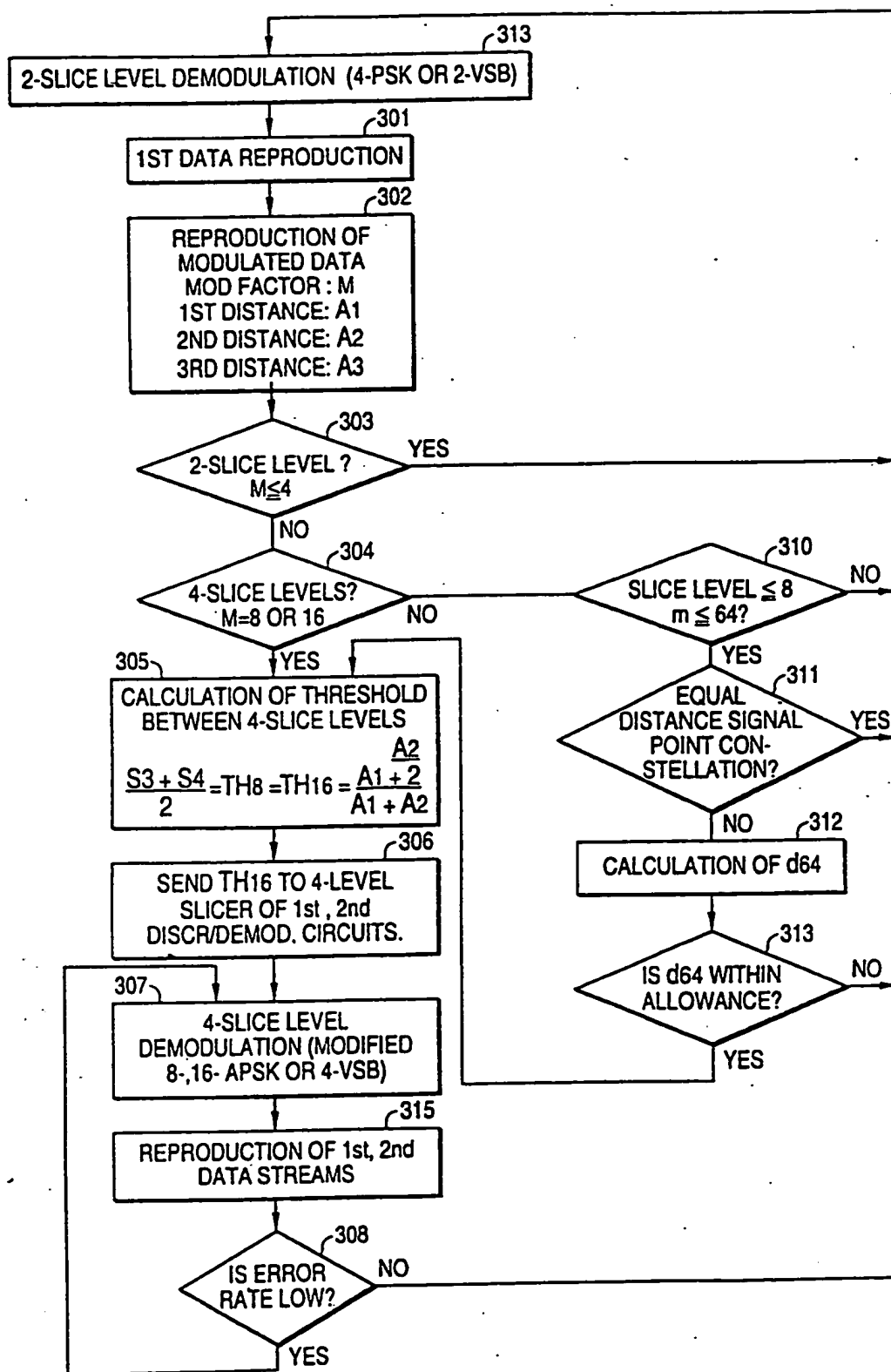


FIG. 24





O I P E J C 8 7  
OCT 24 2002  
PATENT & TRADEMARK

FIG. 25(a)

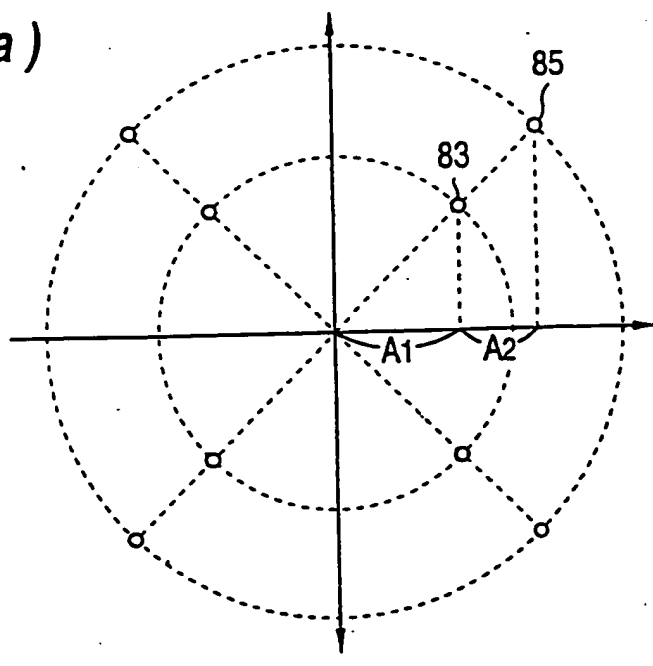


FIG. 25(b)

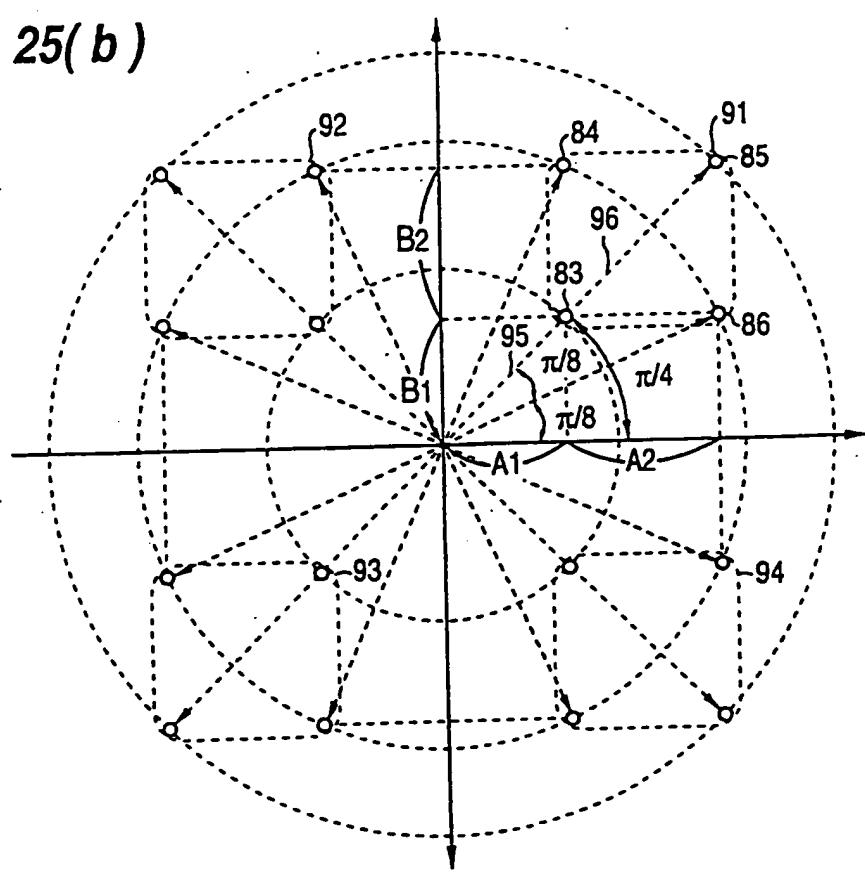
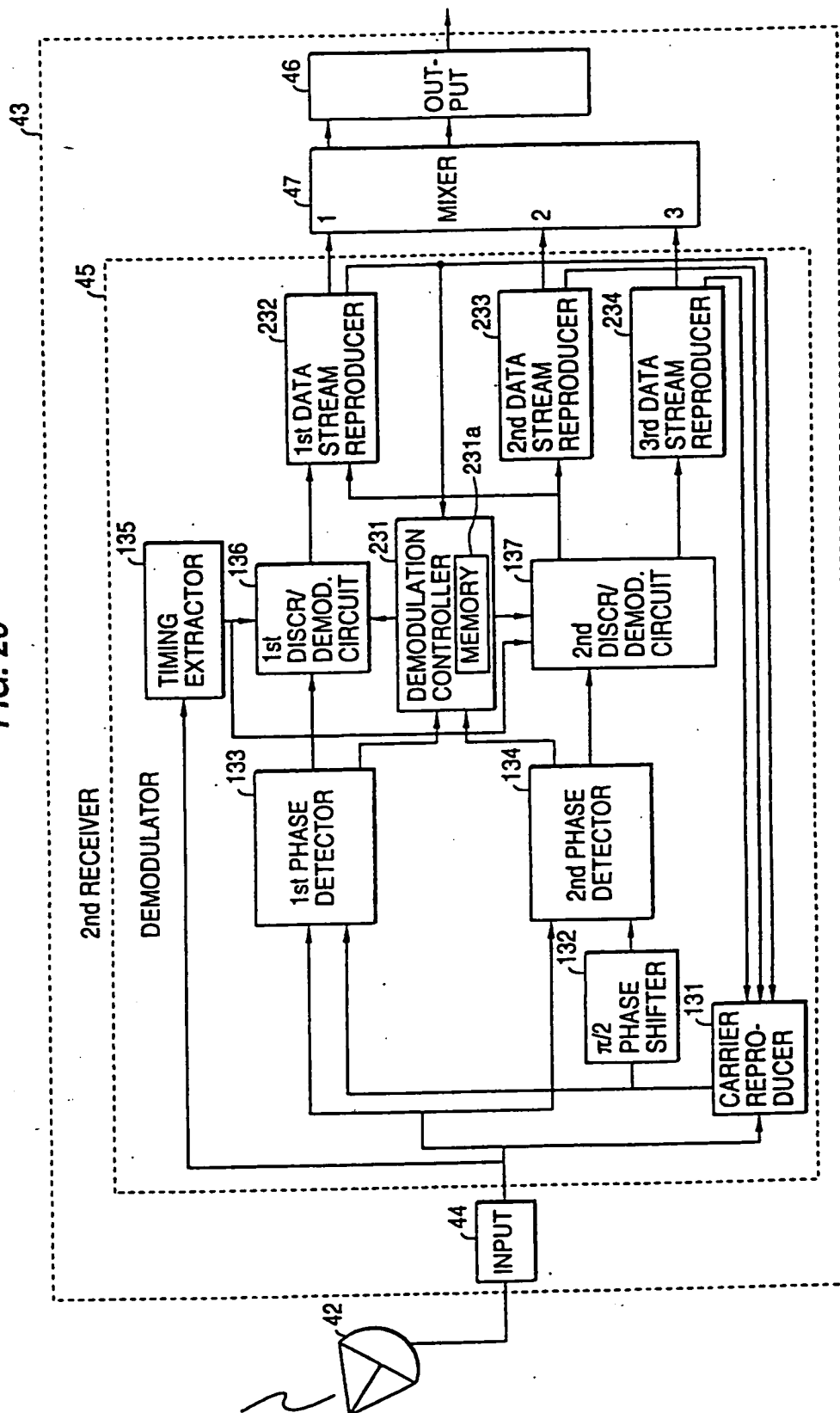




FIG. 26



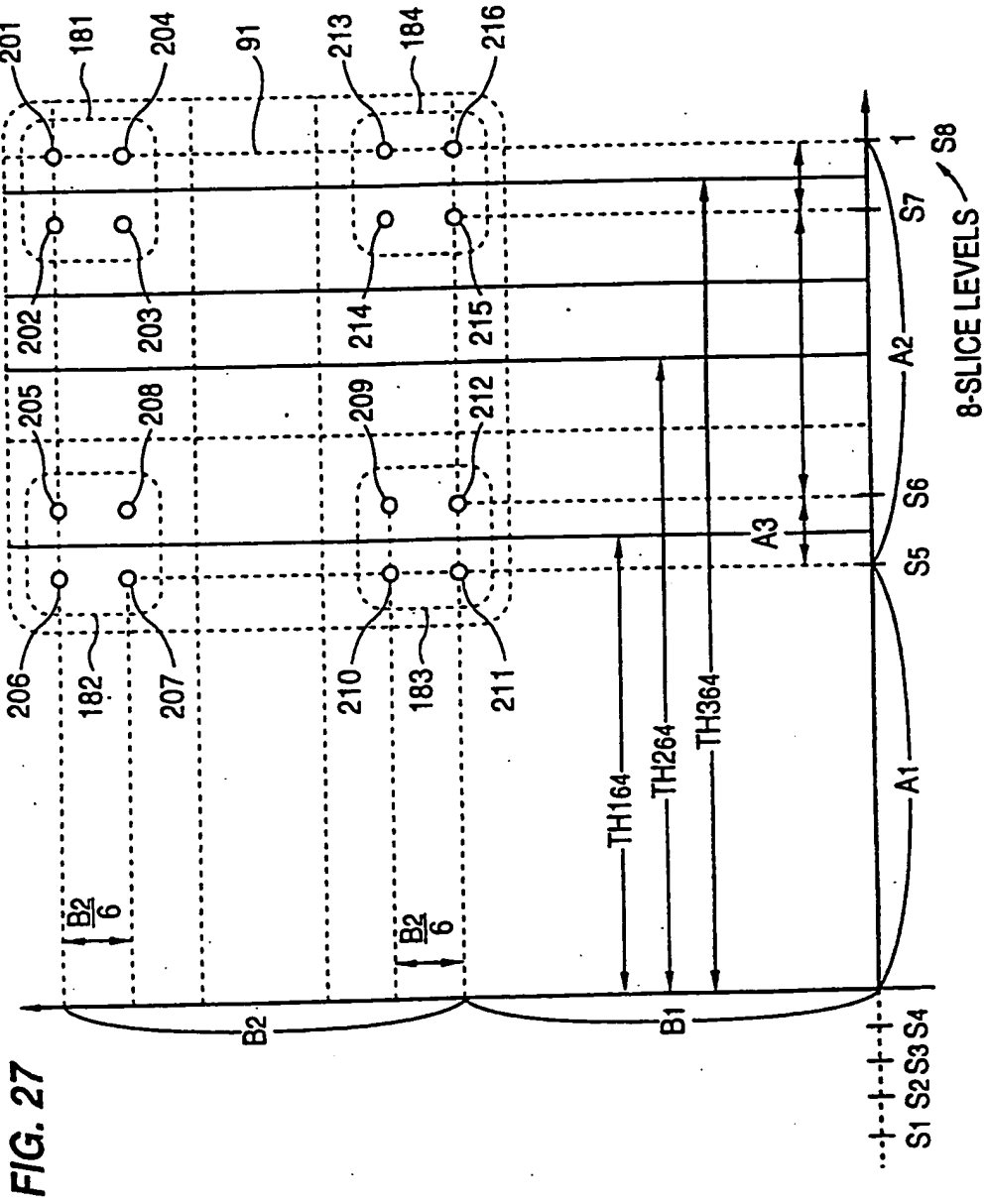




FIG. 28

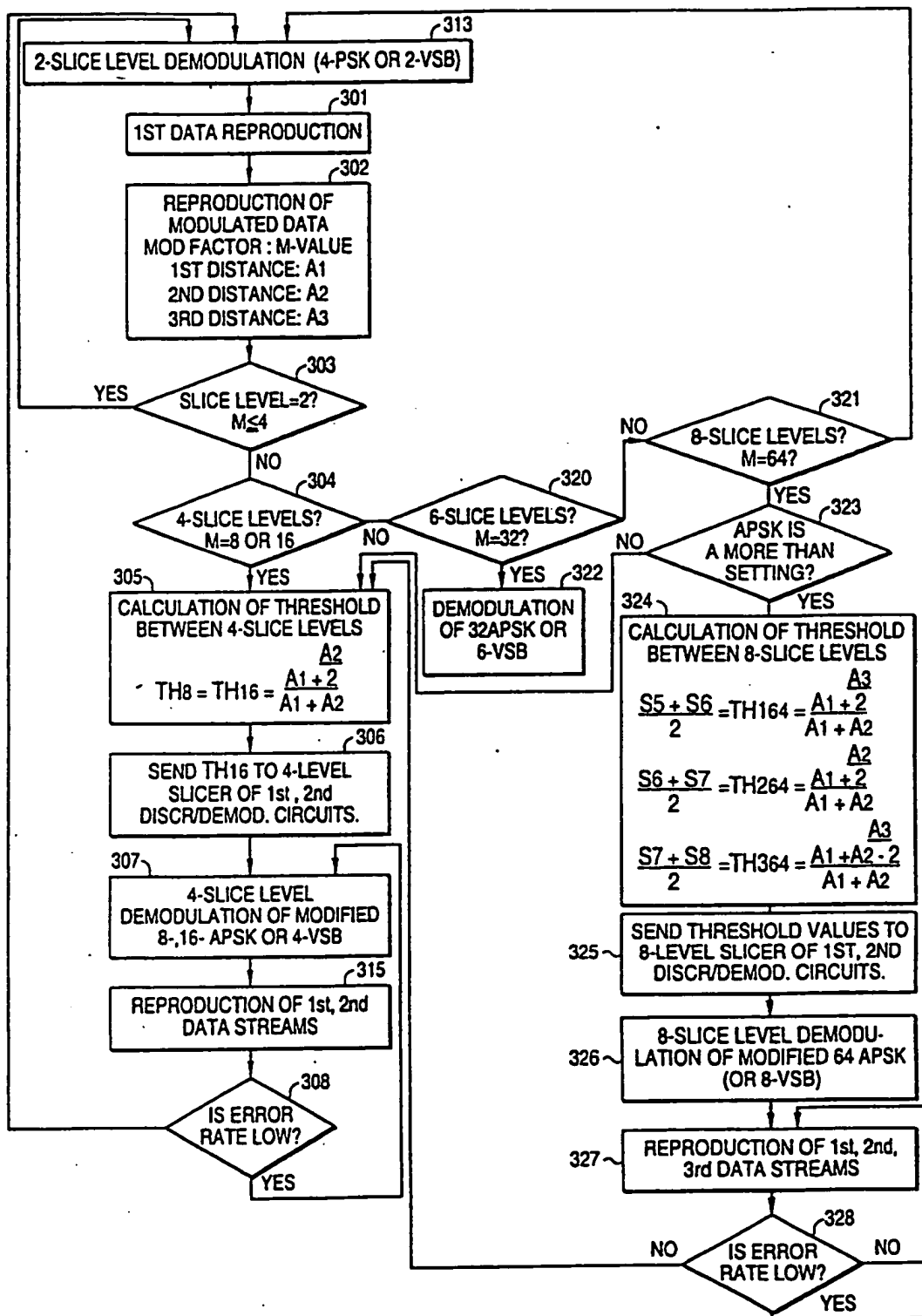


FIG. 29

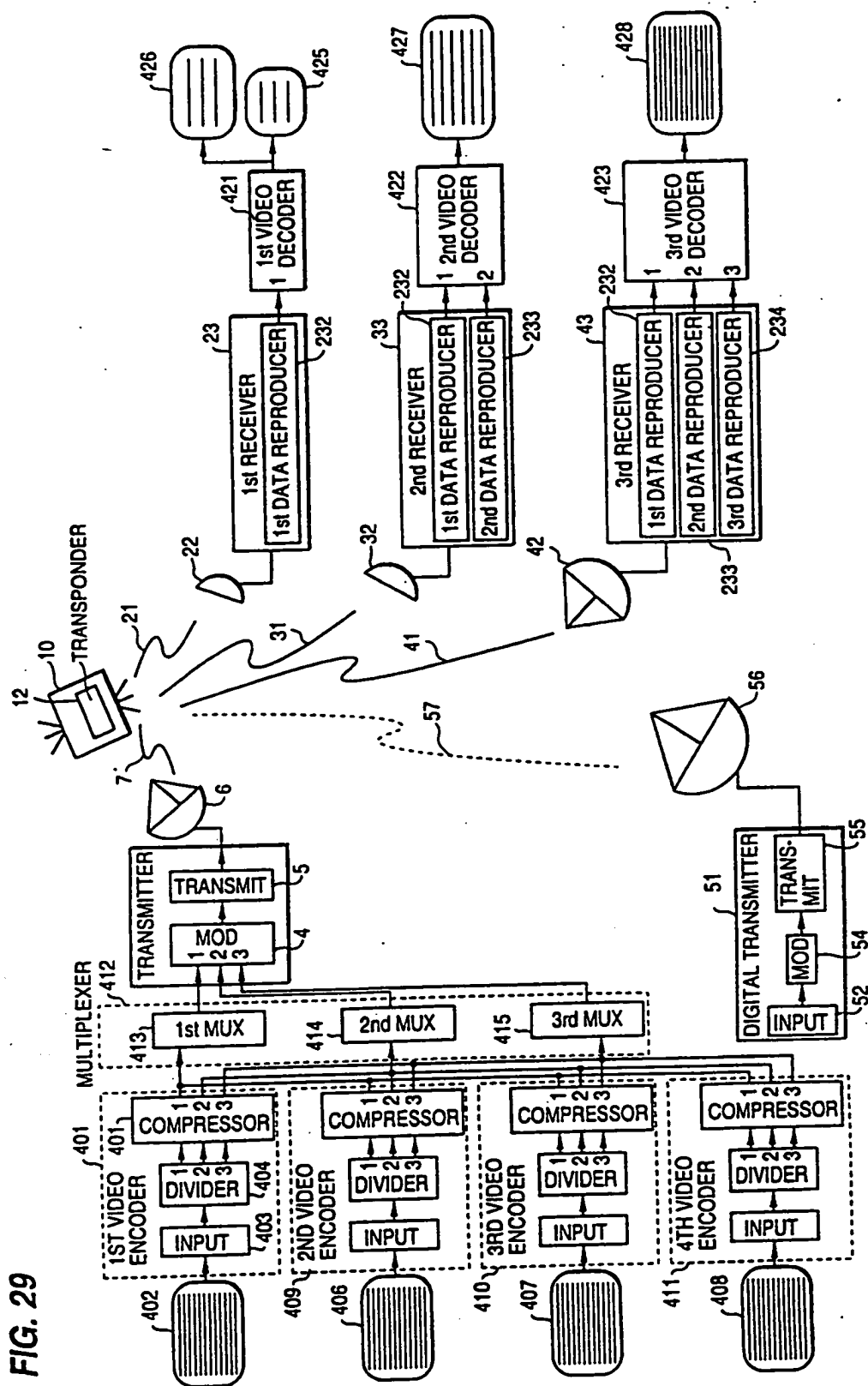




FIG. 30

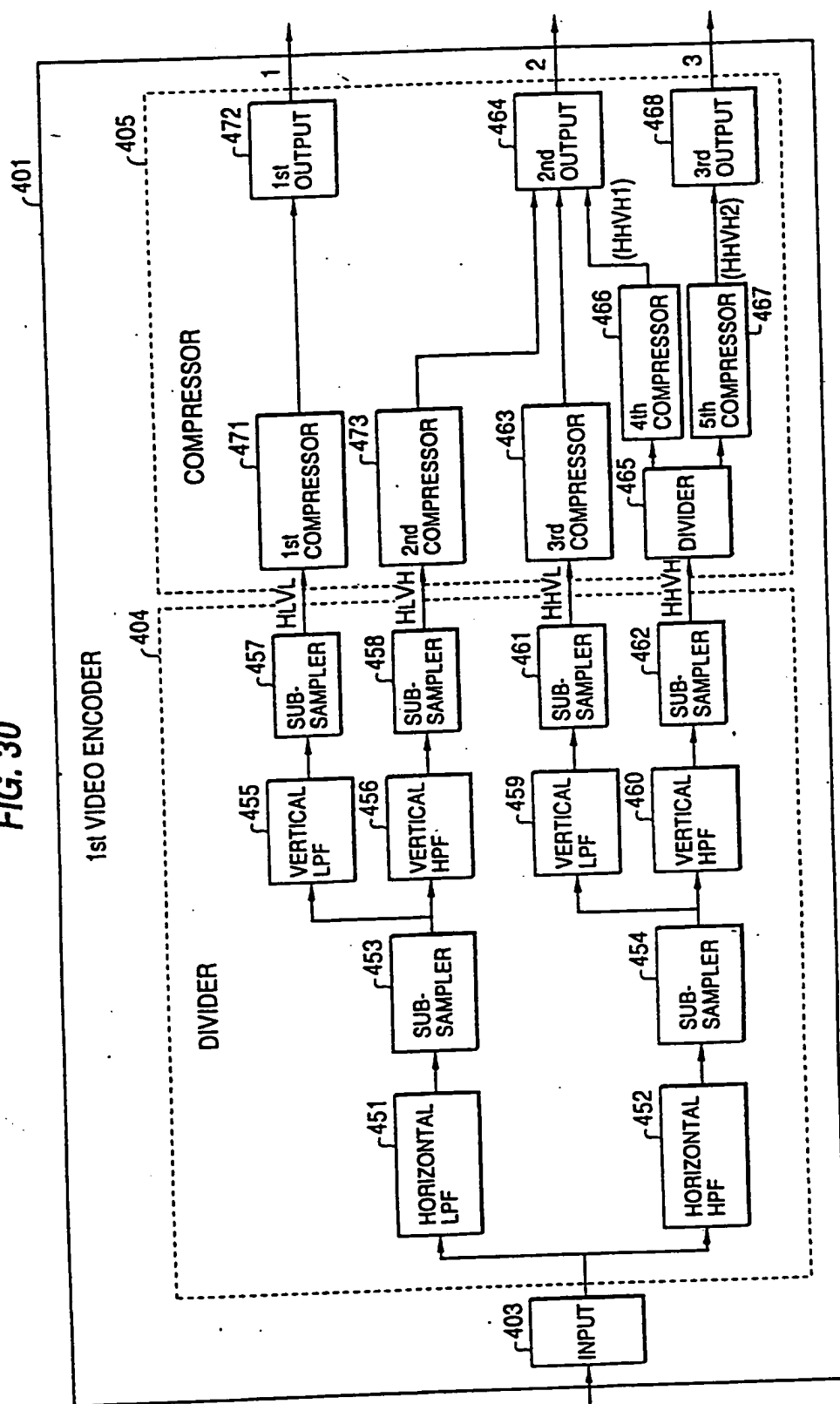




FIG. 31

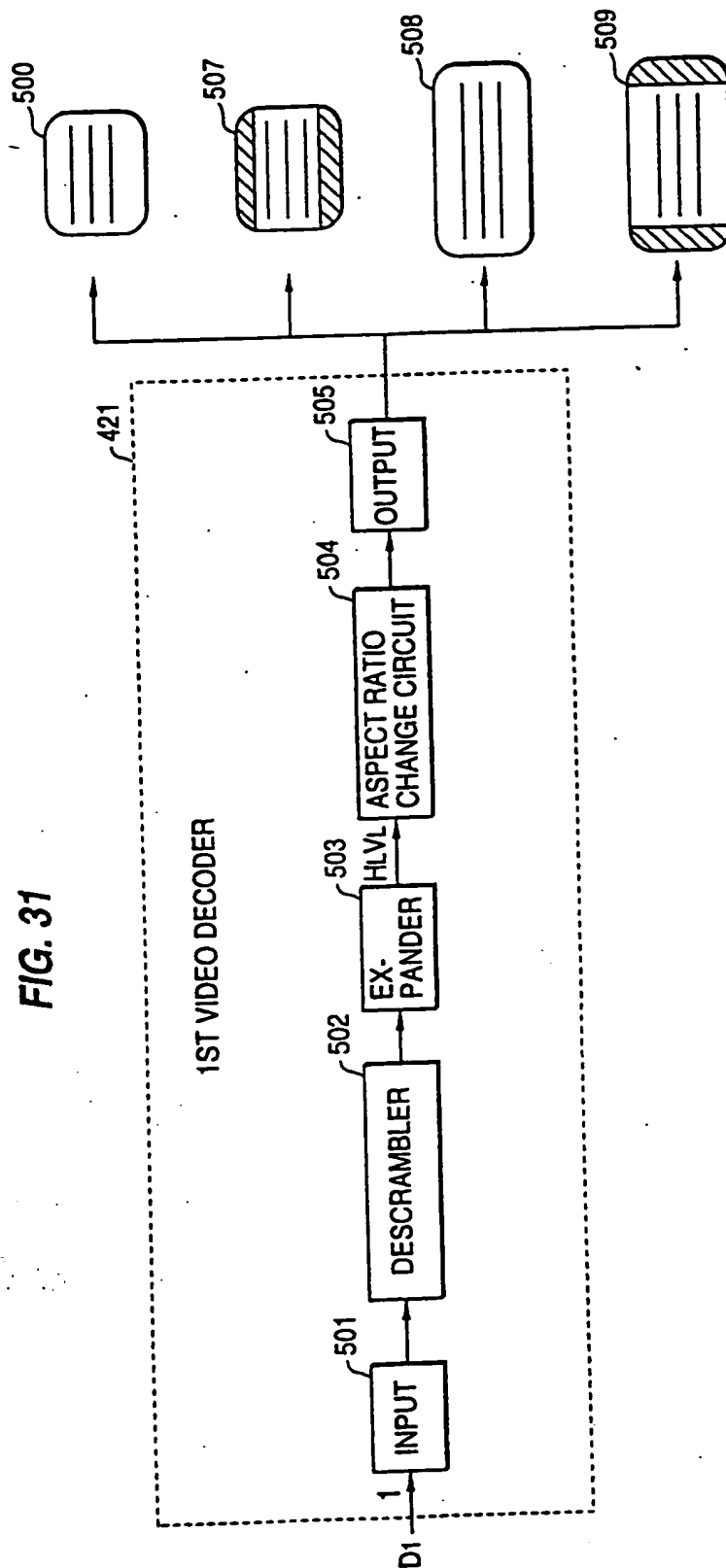


FIG. 32

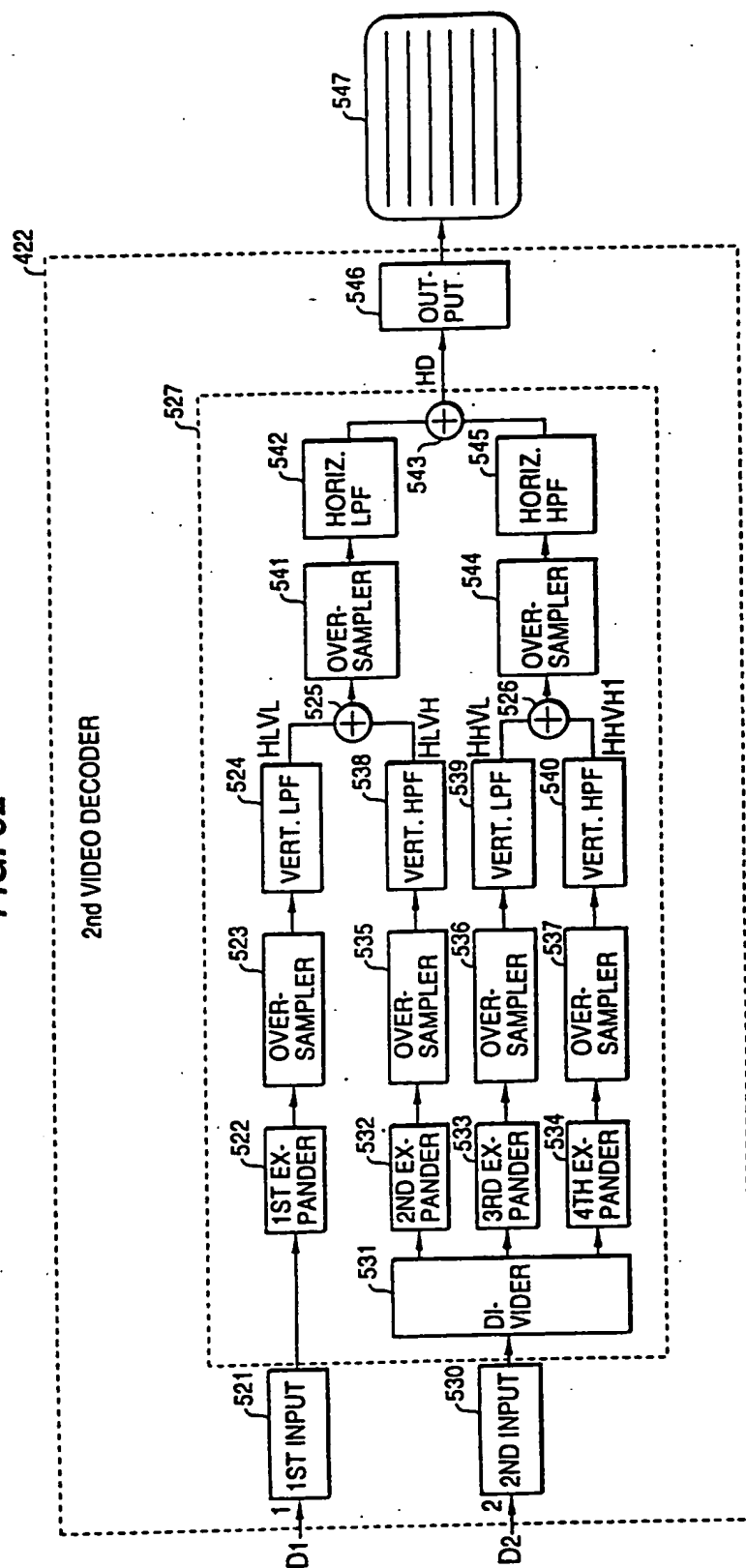






FIG. 33

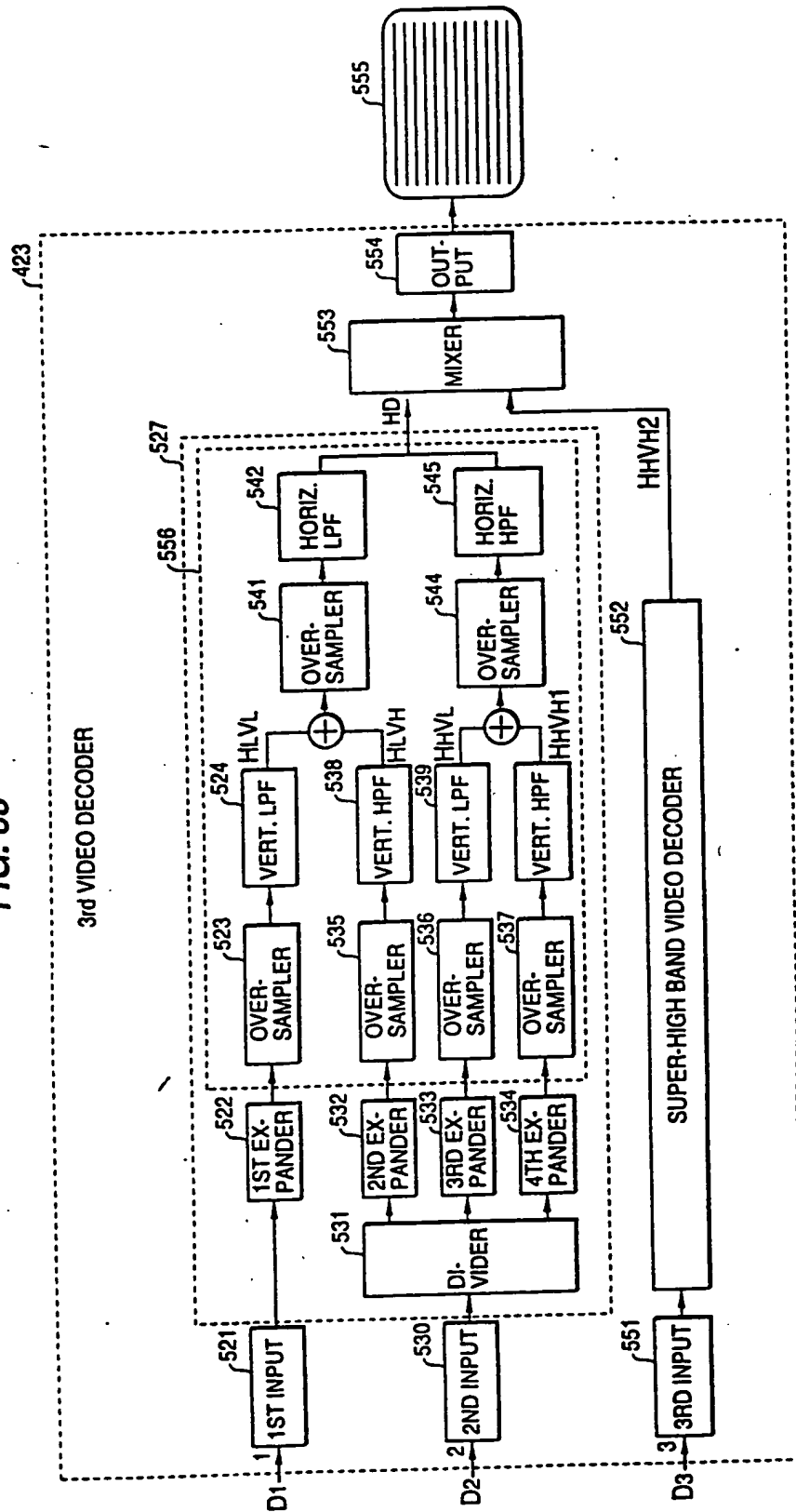




FIG. 34

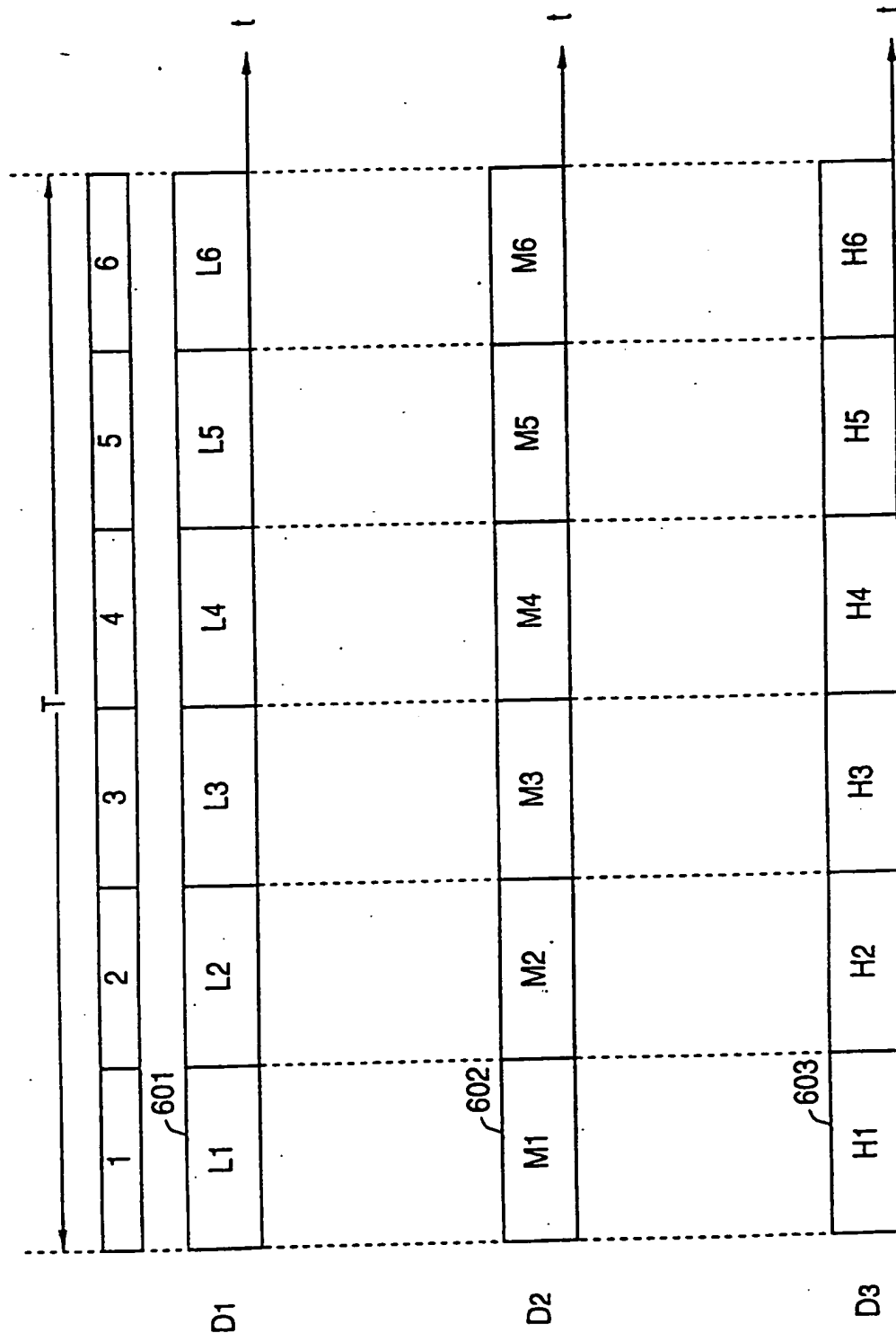




FIG. 35

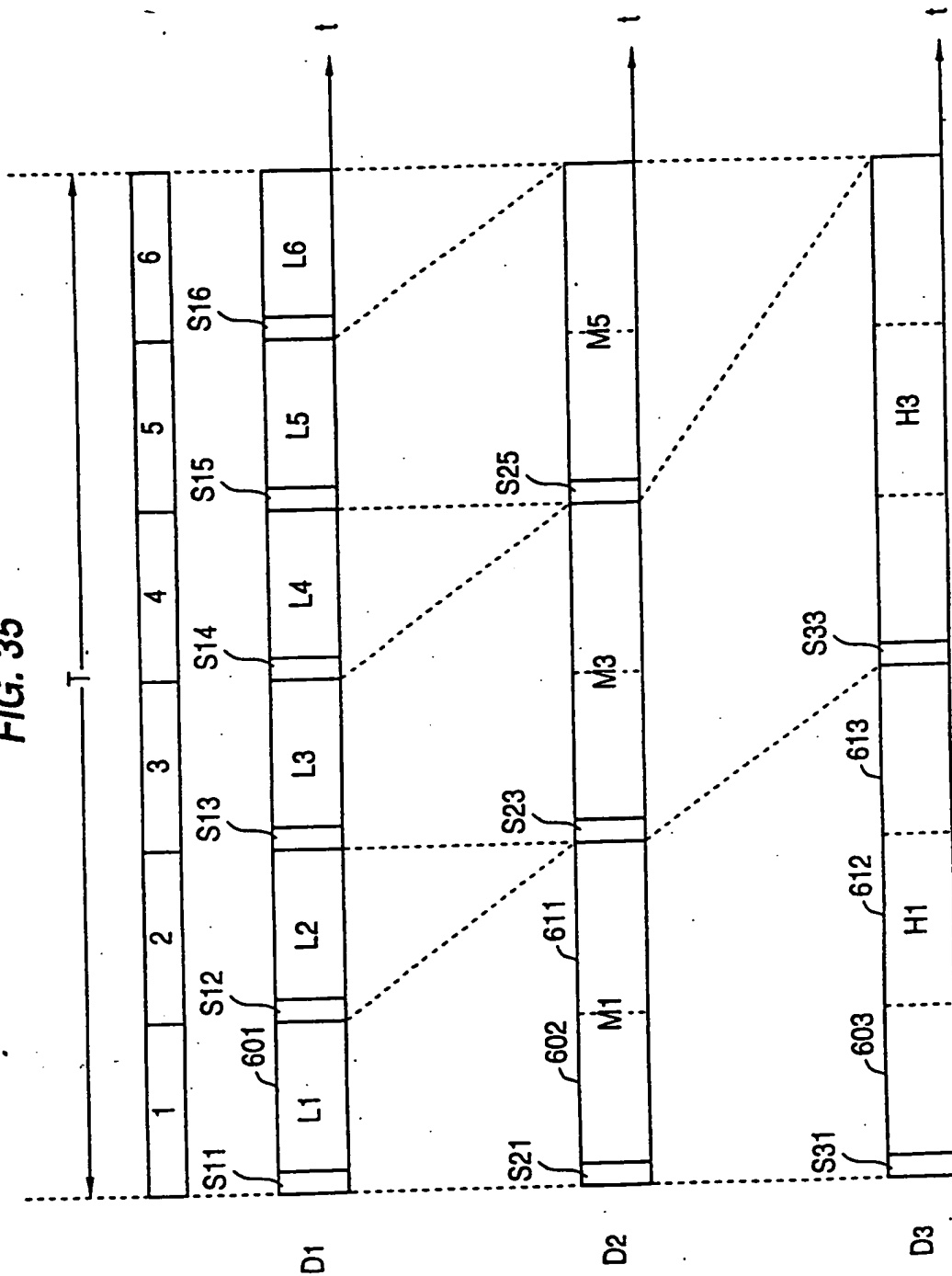




FIG. 36

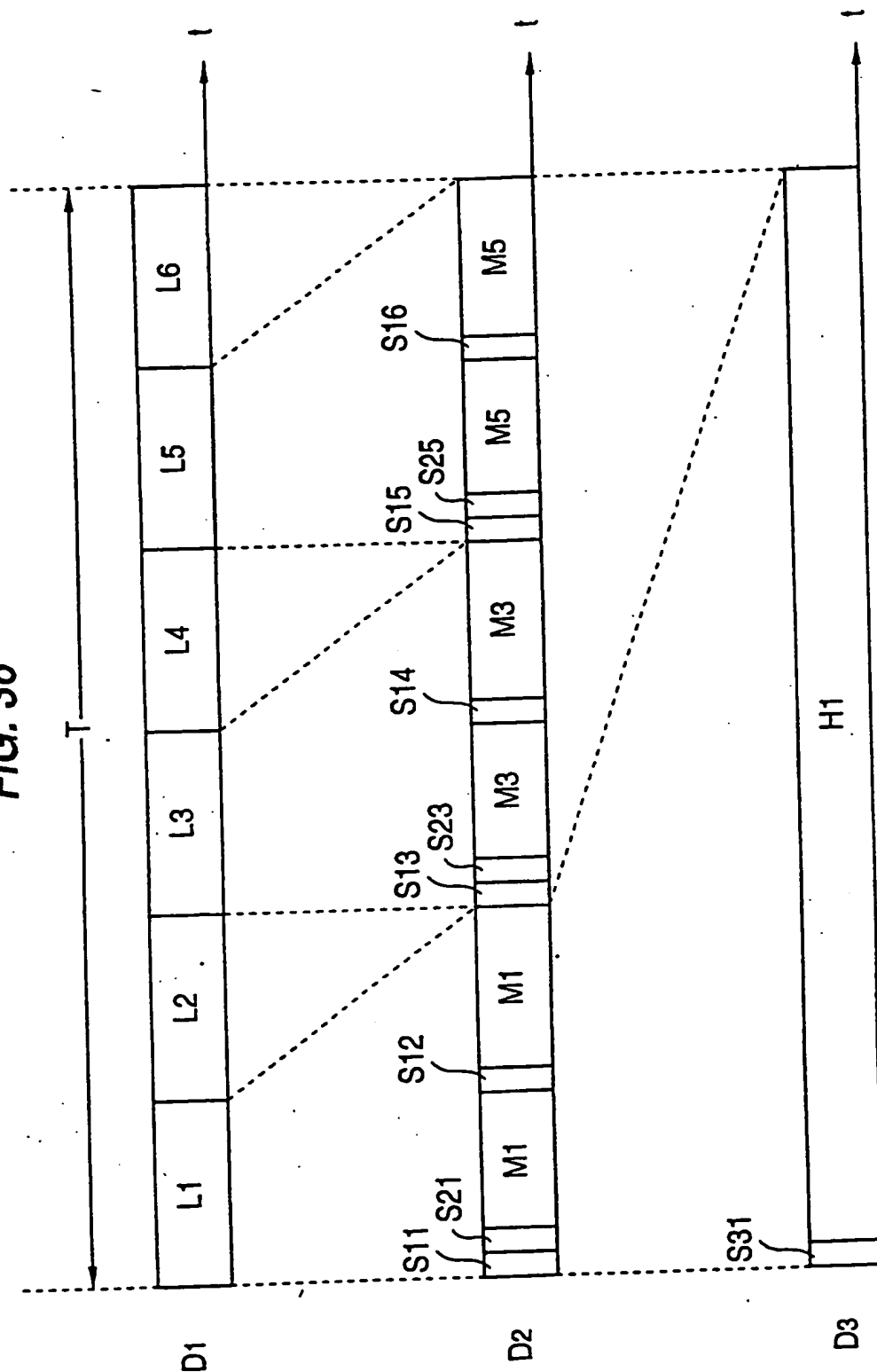




FIG. 37

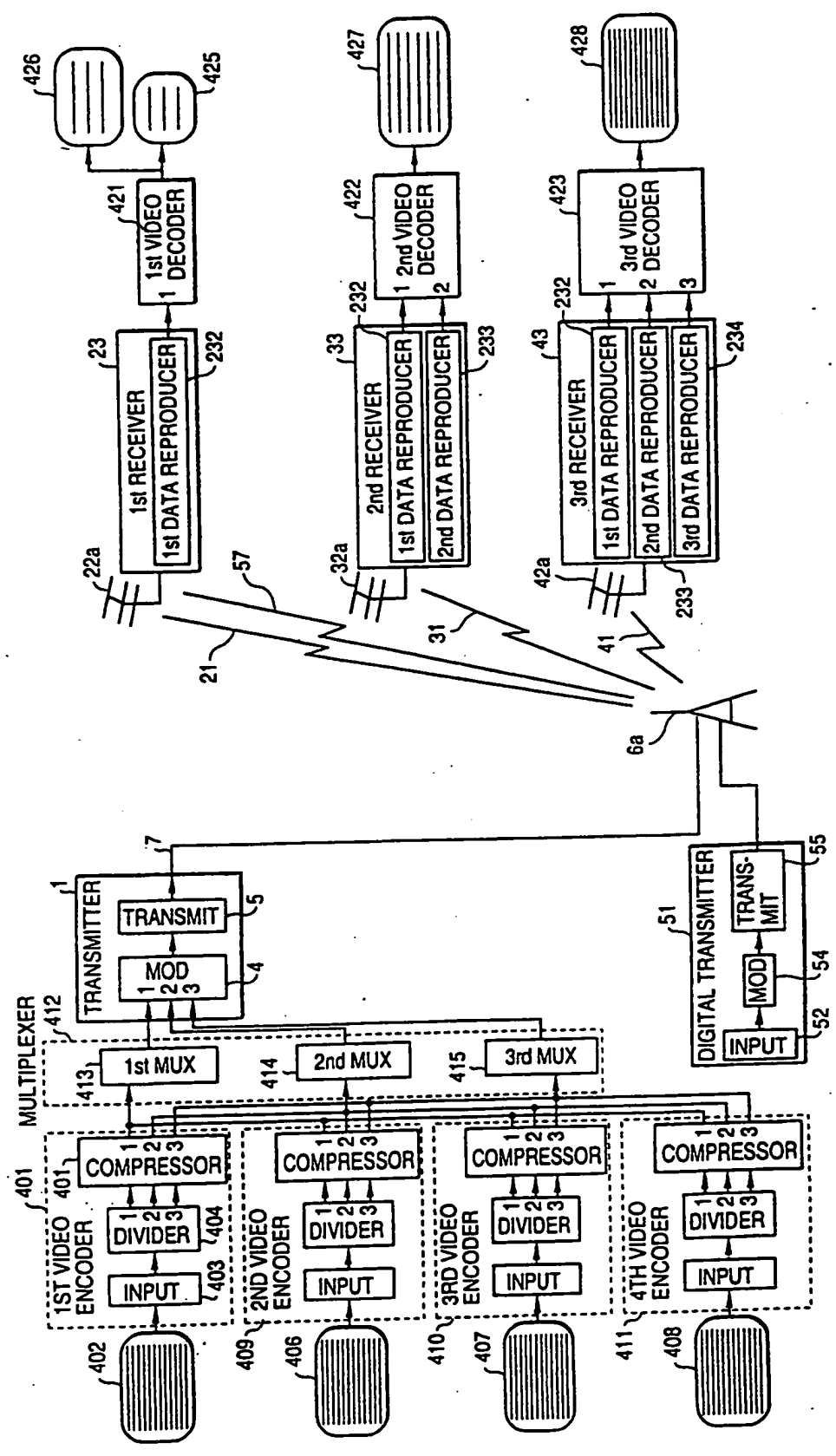




FIG. 38

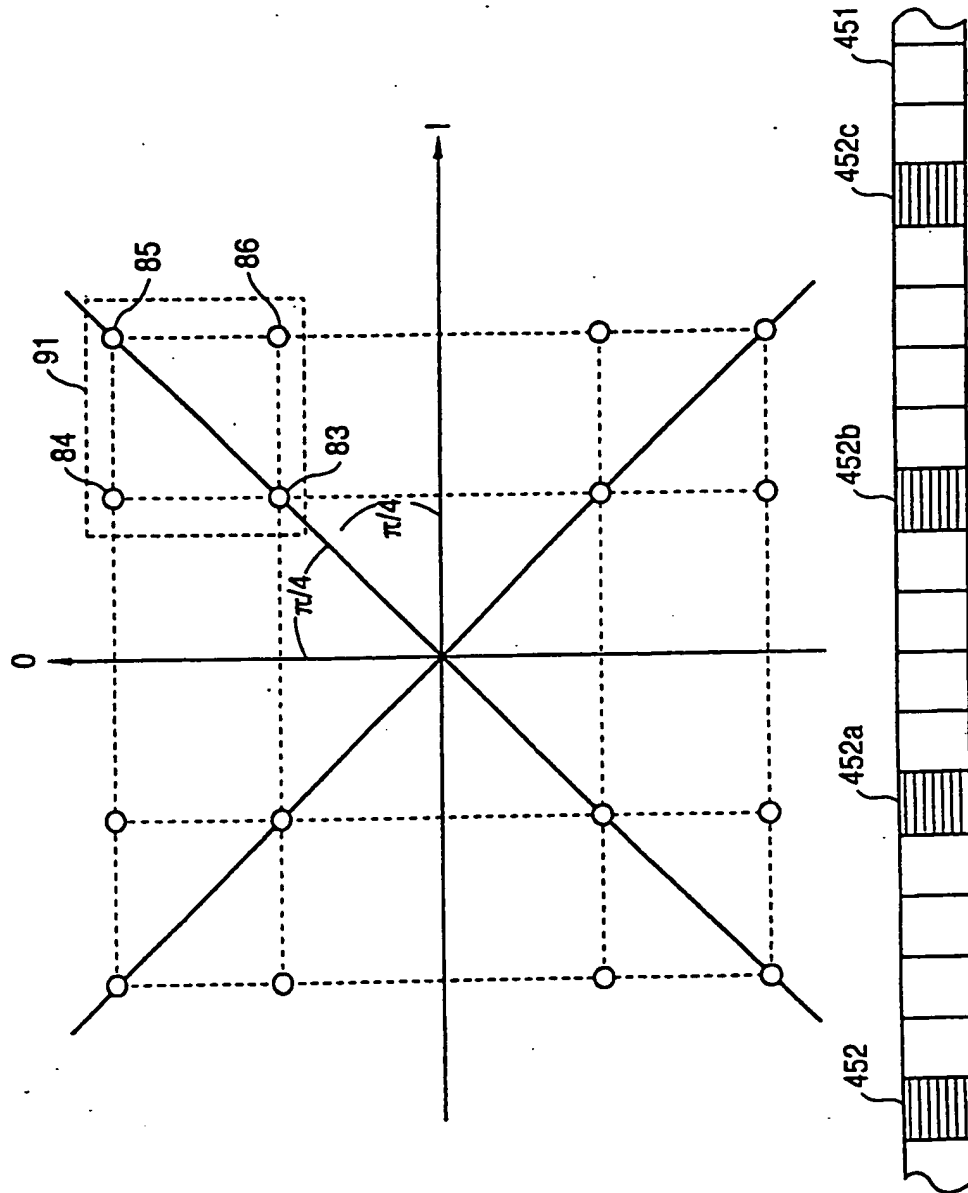




FIG. 39

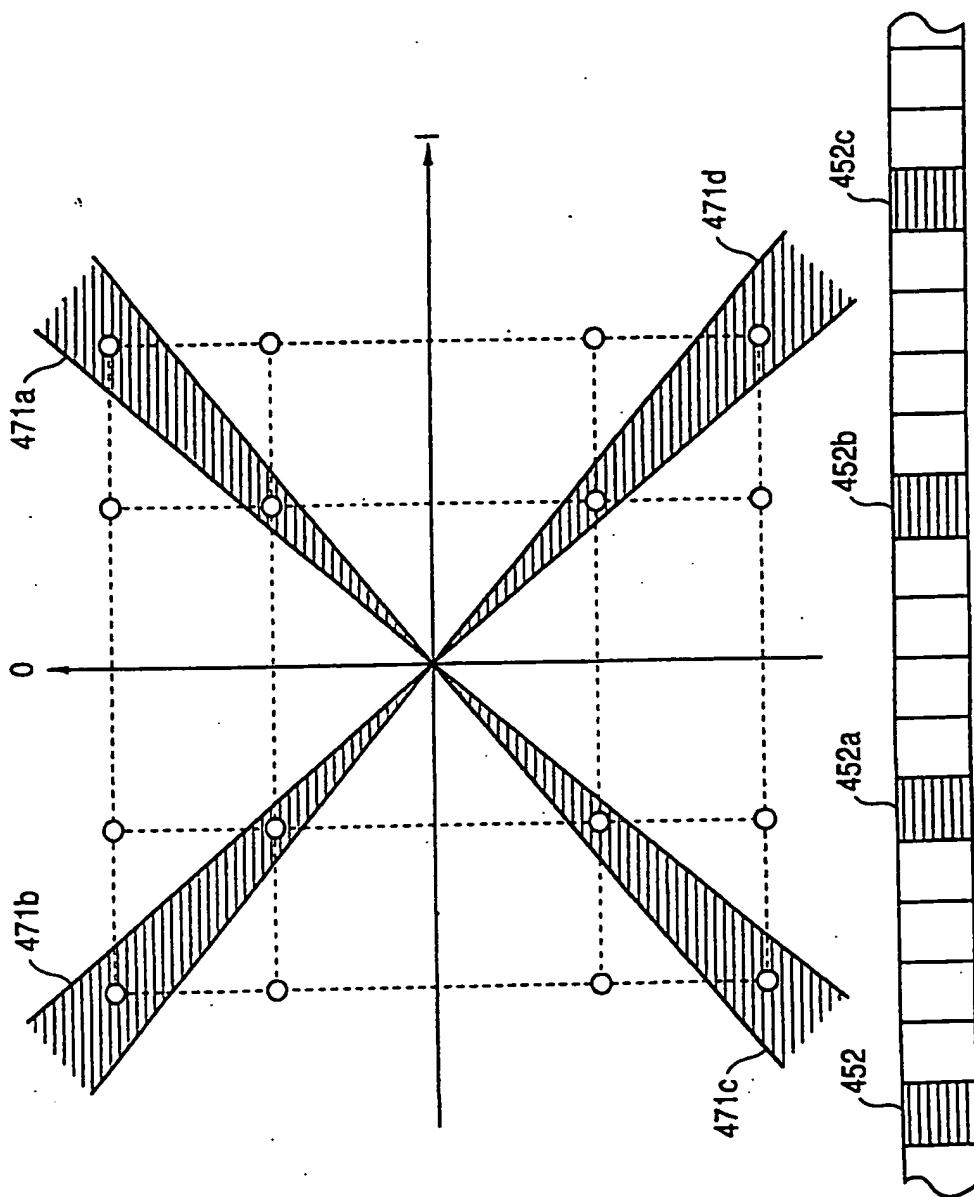
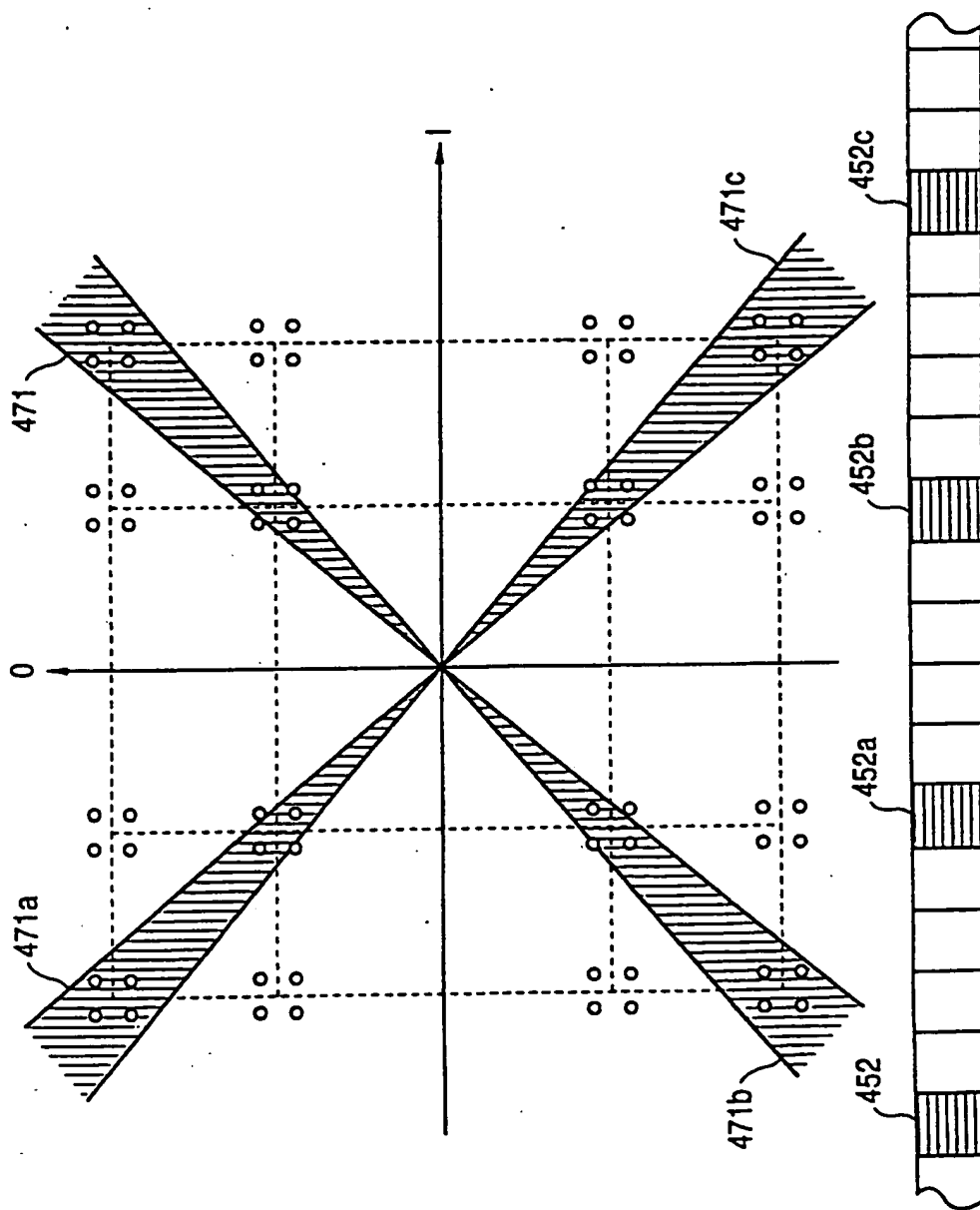




FIG. 40





**FIG. 41**

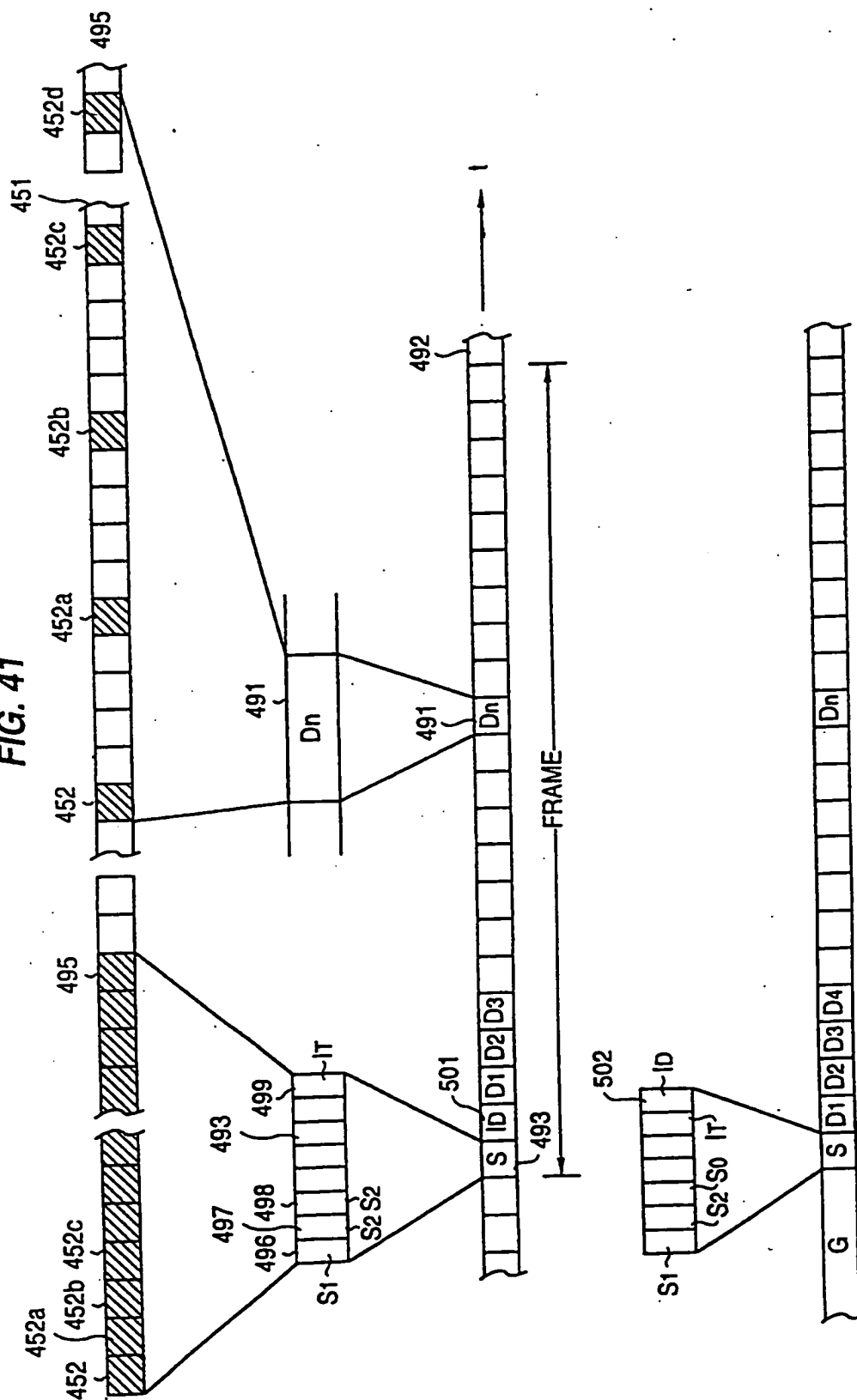




FIG. 42

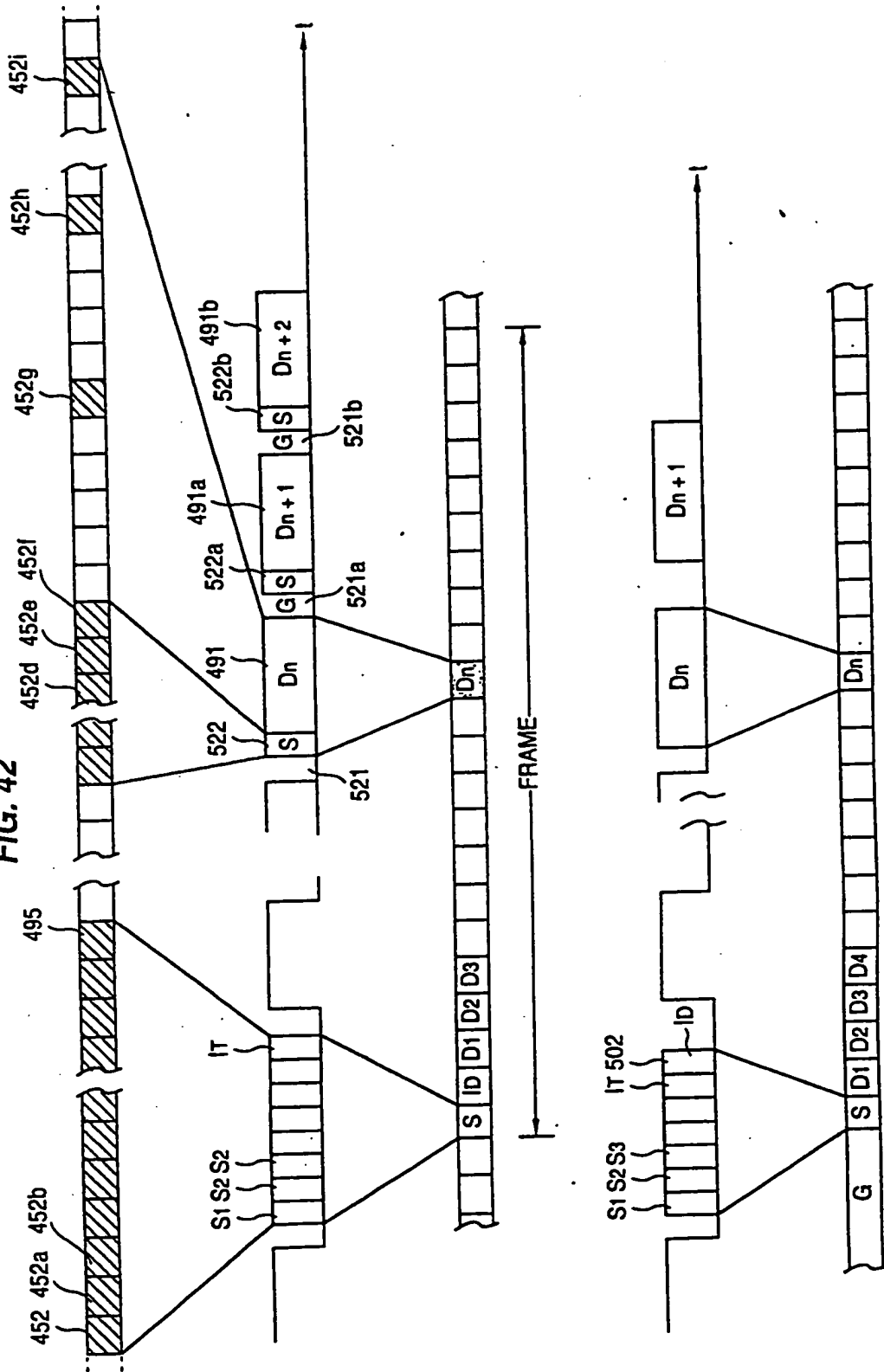
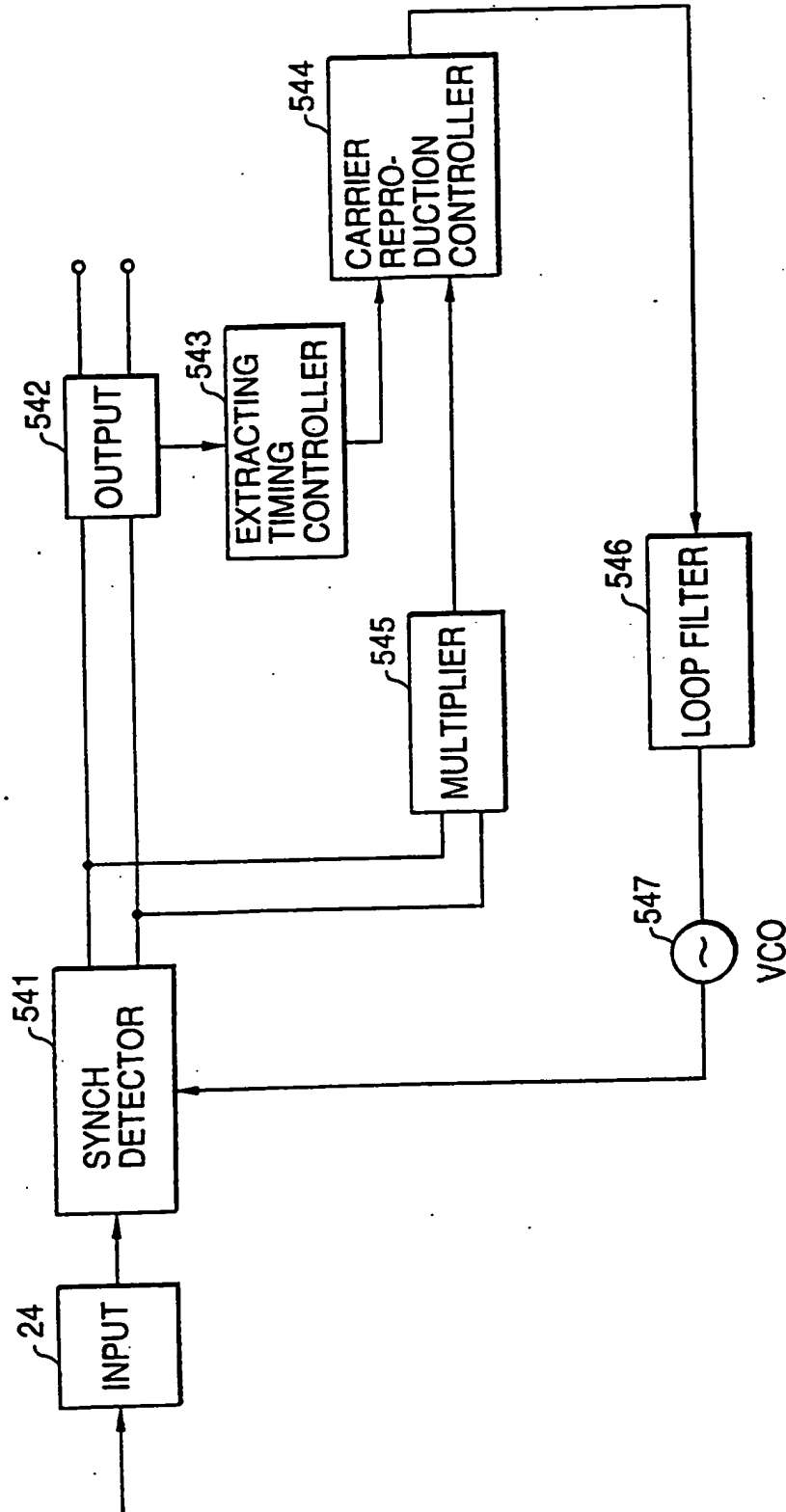




FIG. 43





U.S. Patent

Feb. 4, 1997

Sheet 44 of 178

5,600,672

FIG. 44

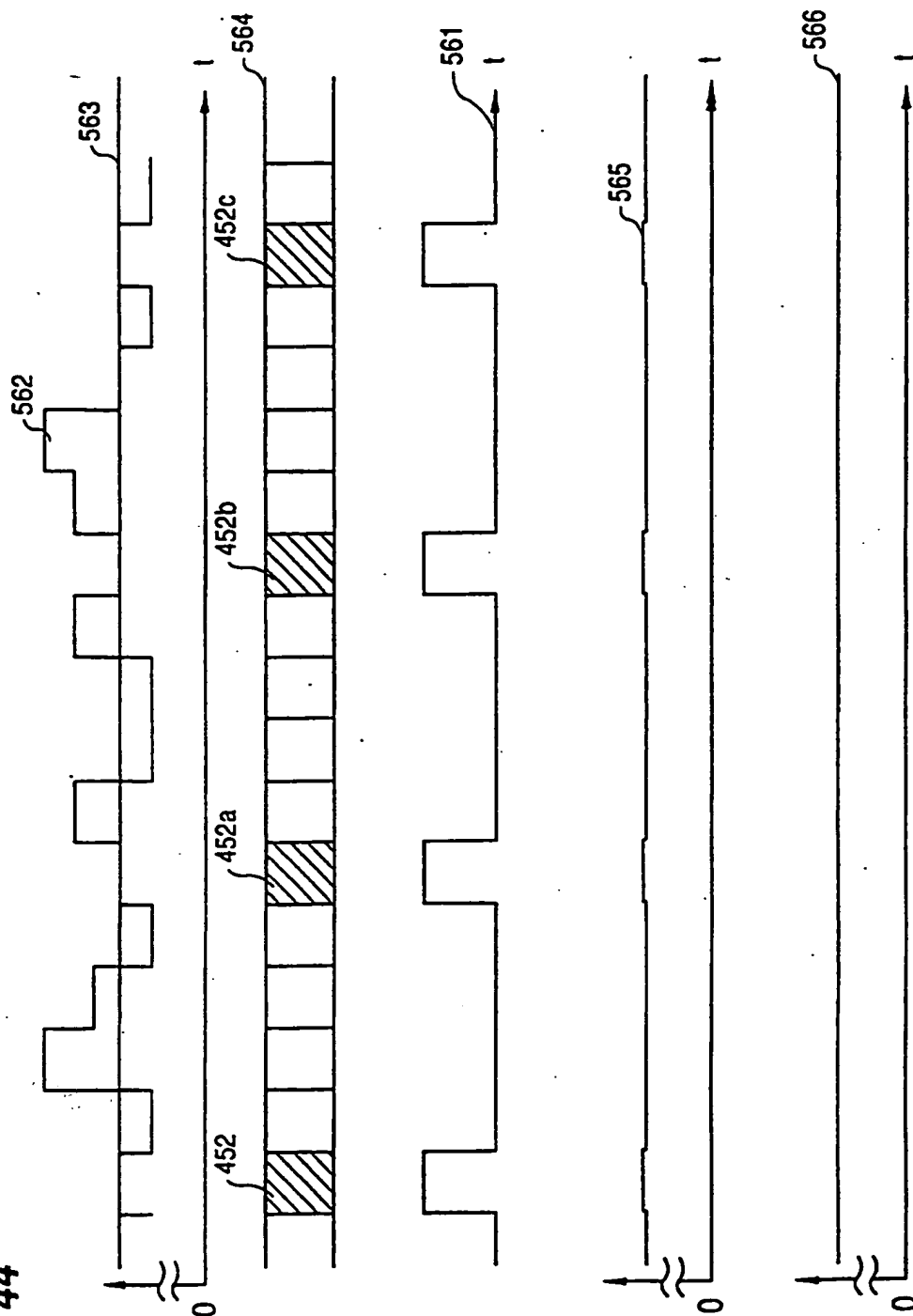




FIG. 45

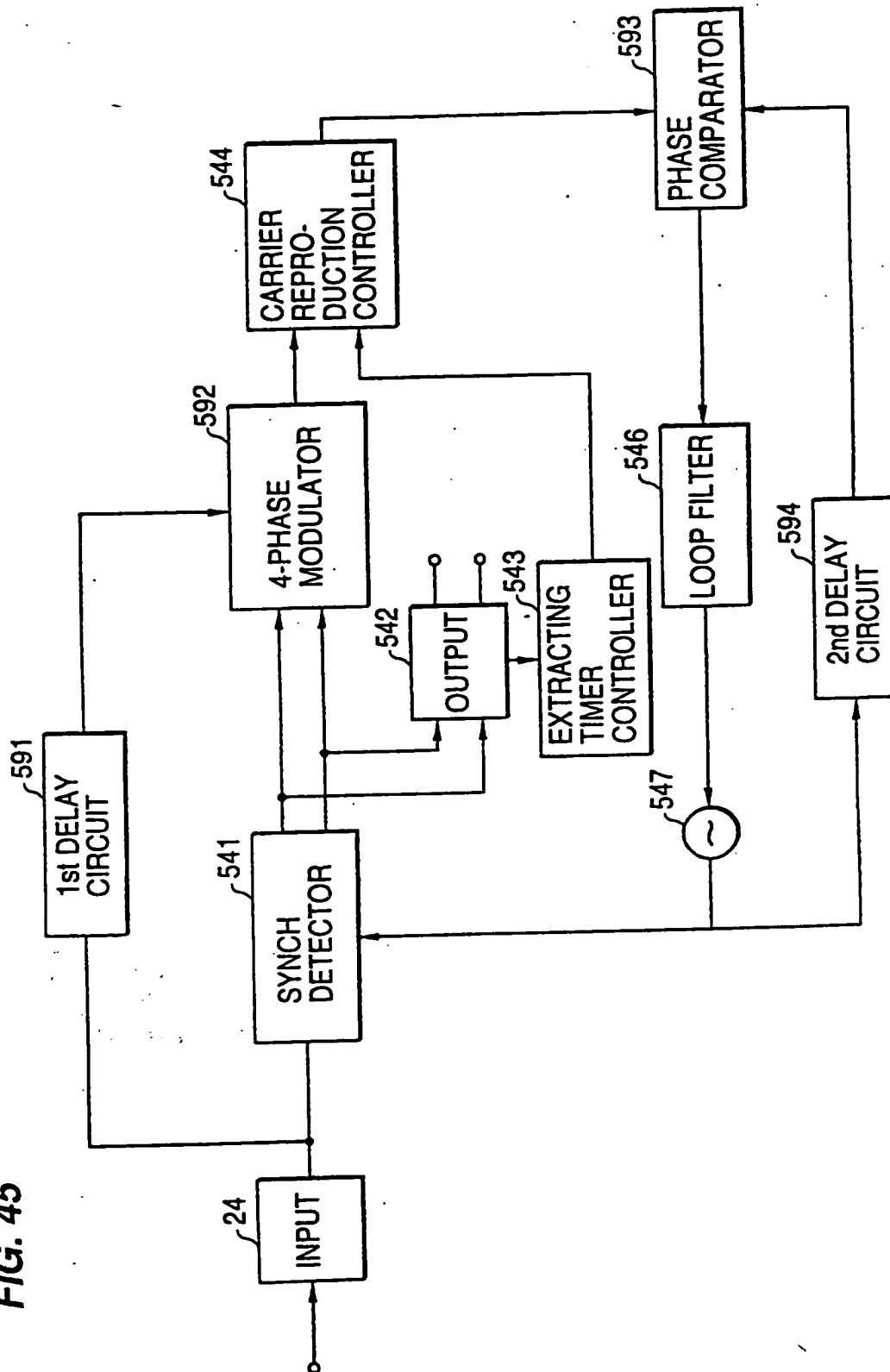




FIG. 46

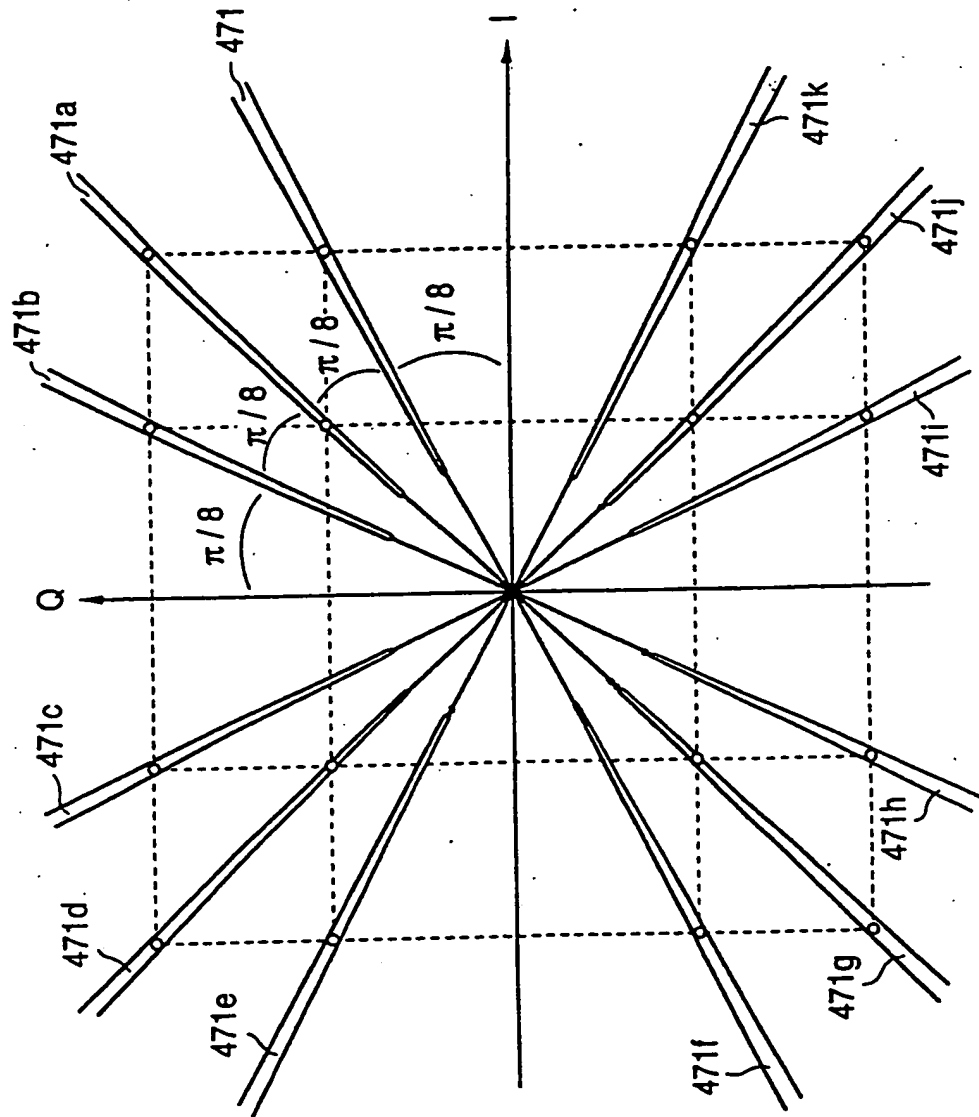




FIG. 47

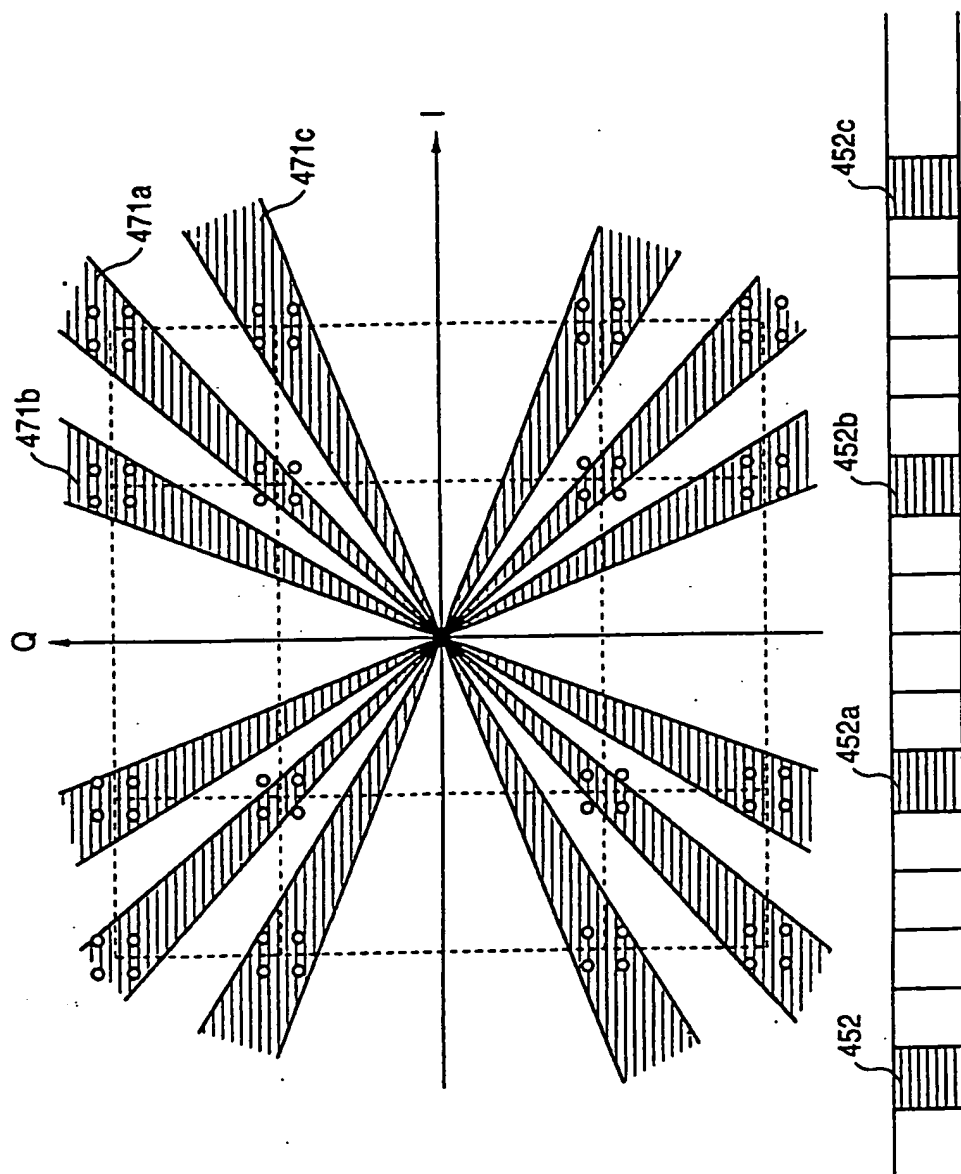




FIG. 48

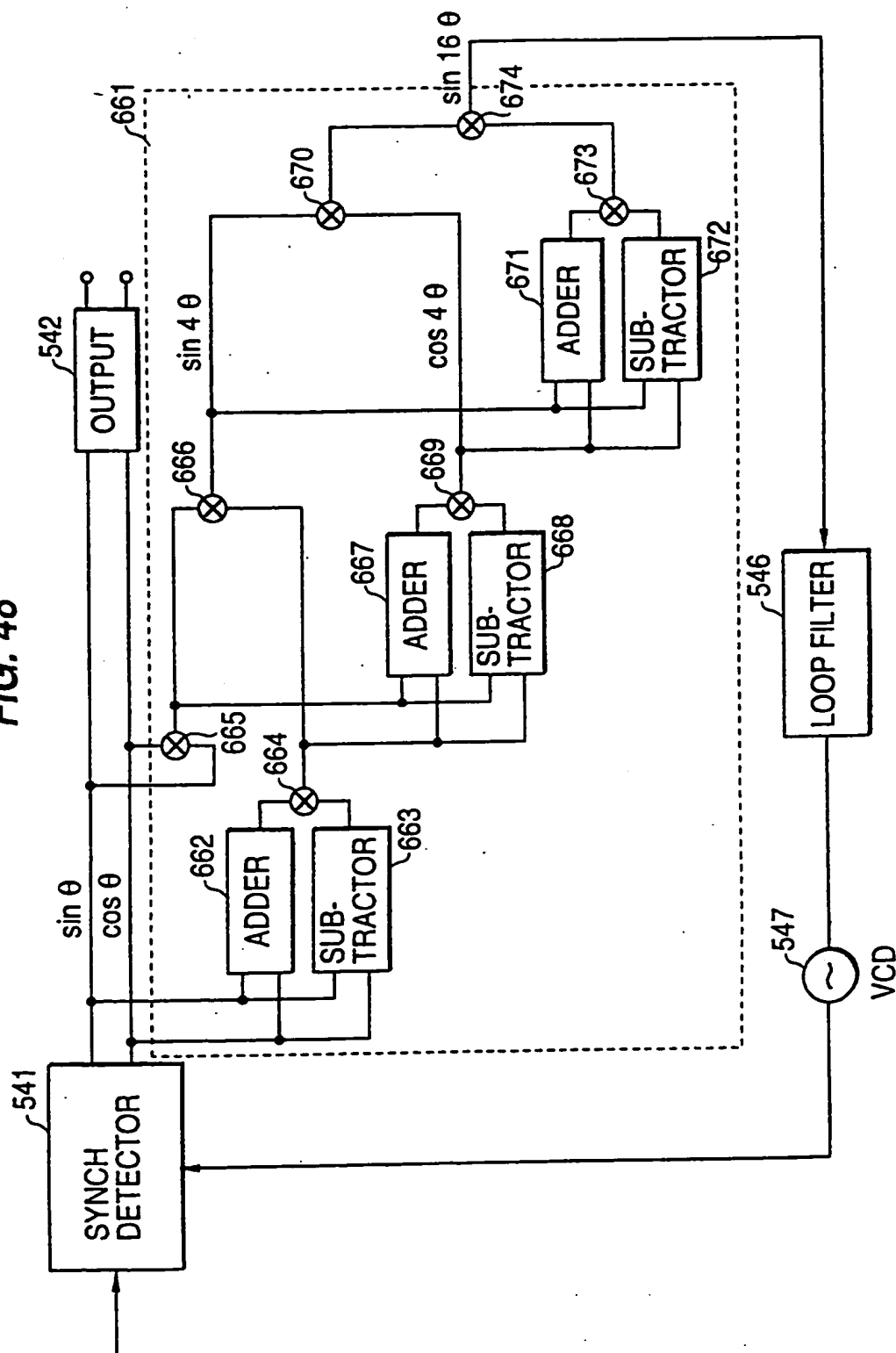
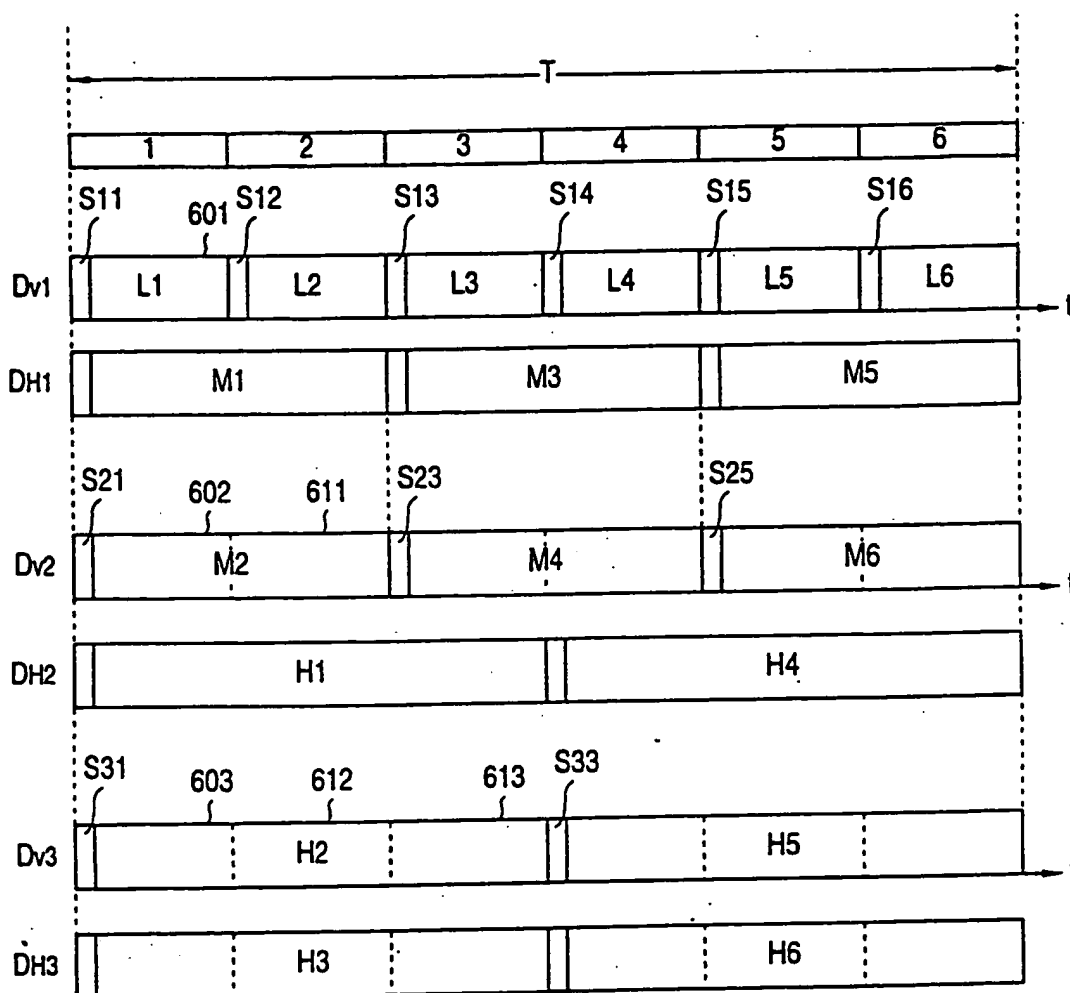






FIG. 49





Sheet 50 of 178

**5,600,672**

**FIG. 50**

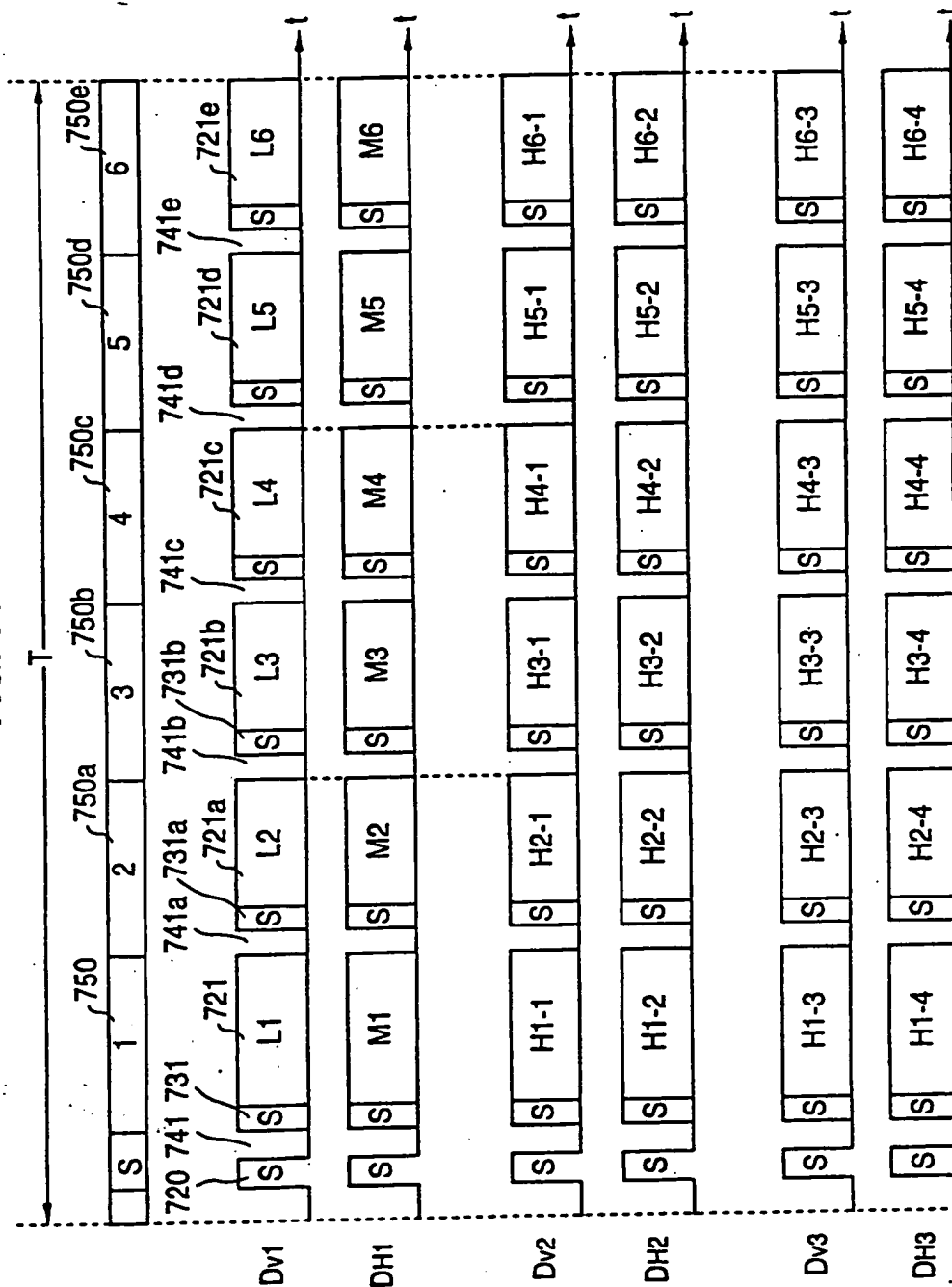
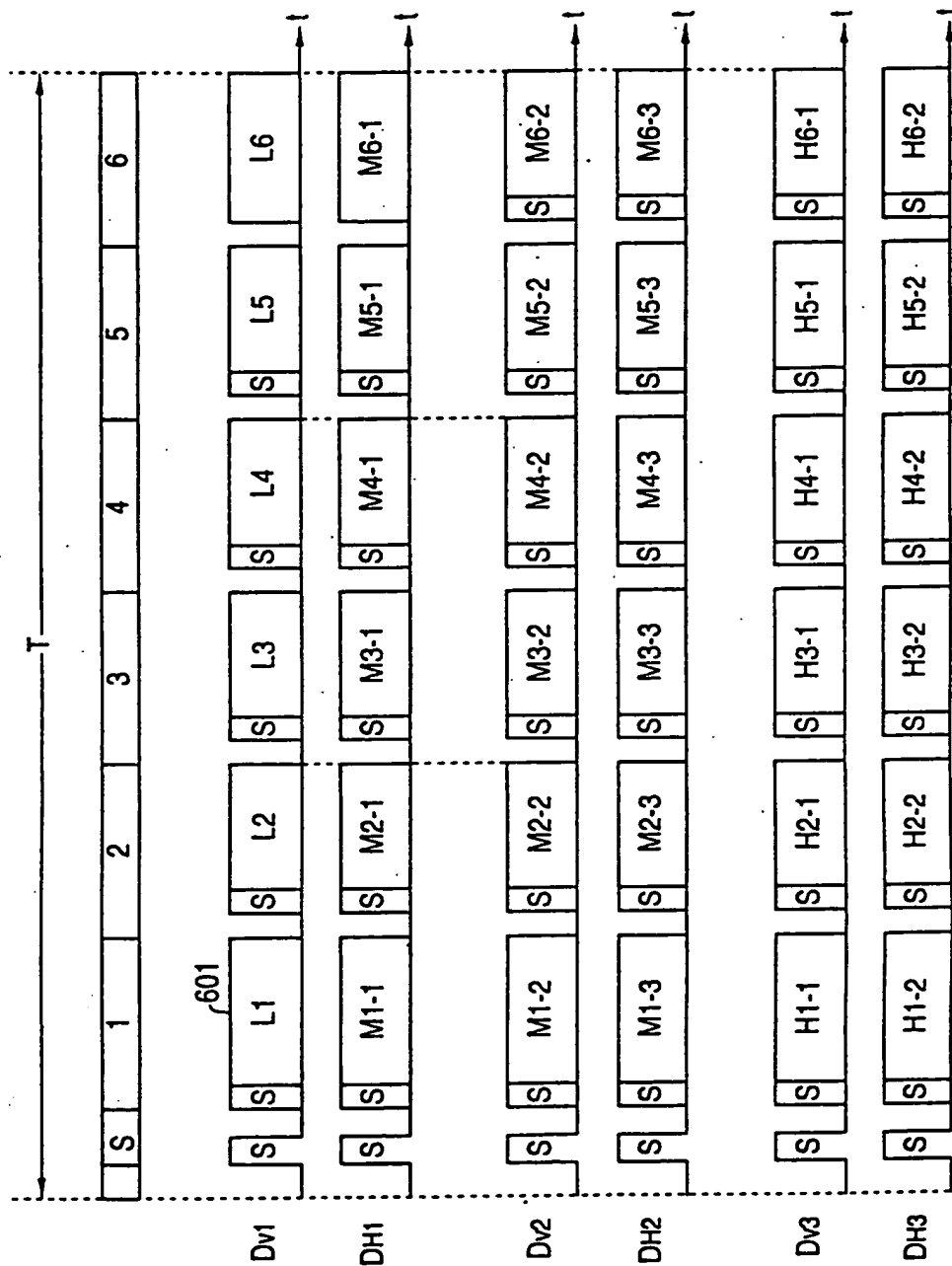




FIG. 51





U.S. Patent

Feb. 4, 1997

Sheet 52 of 178

5,600,672

FIG. 52

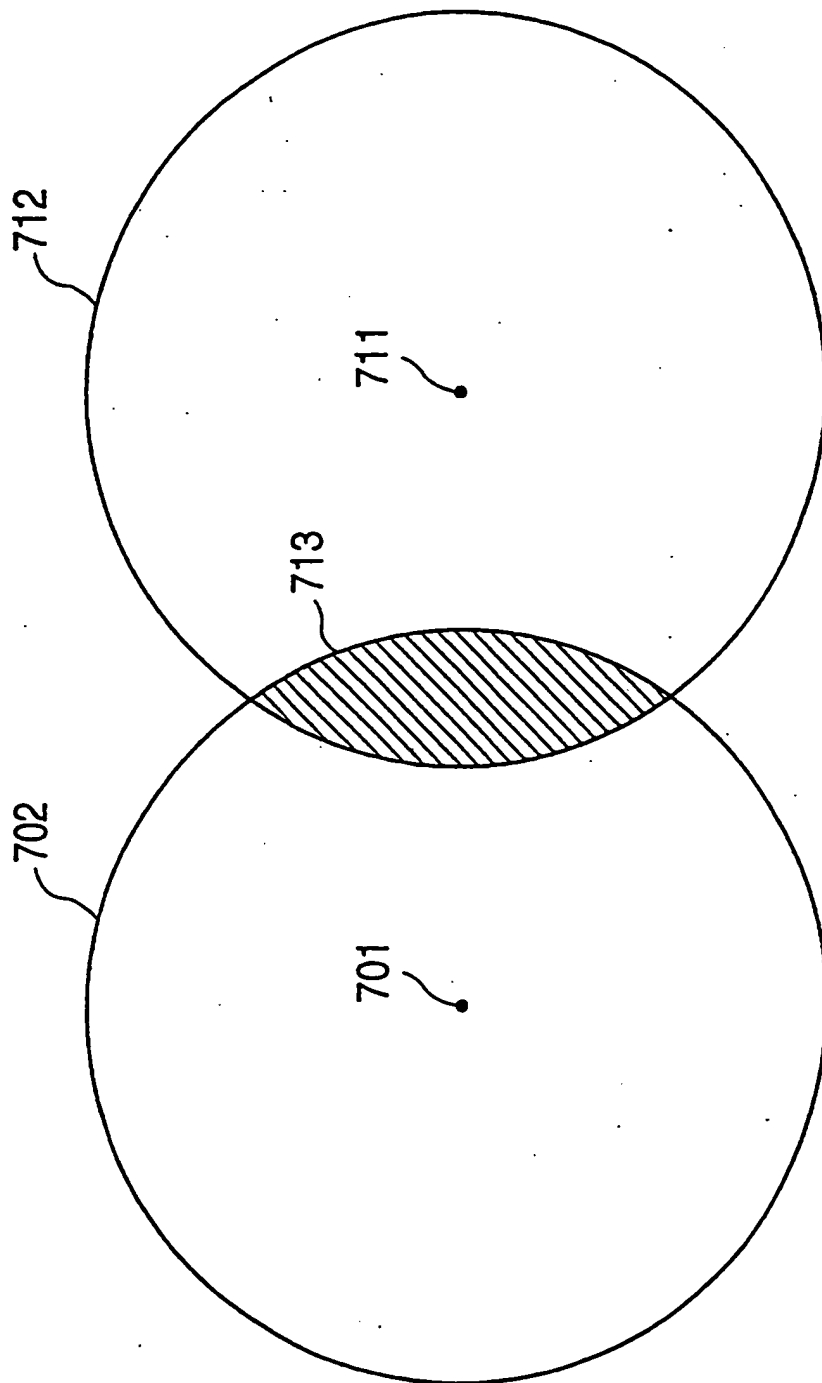
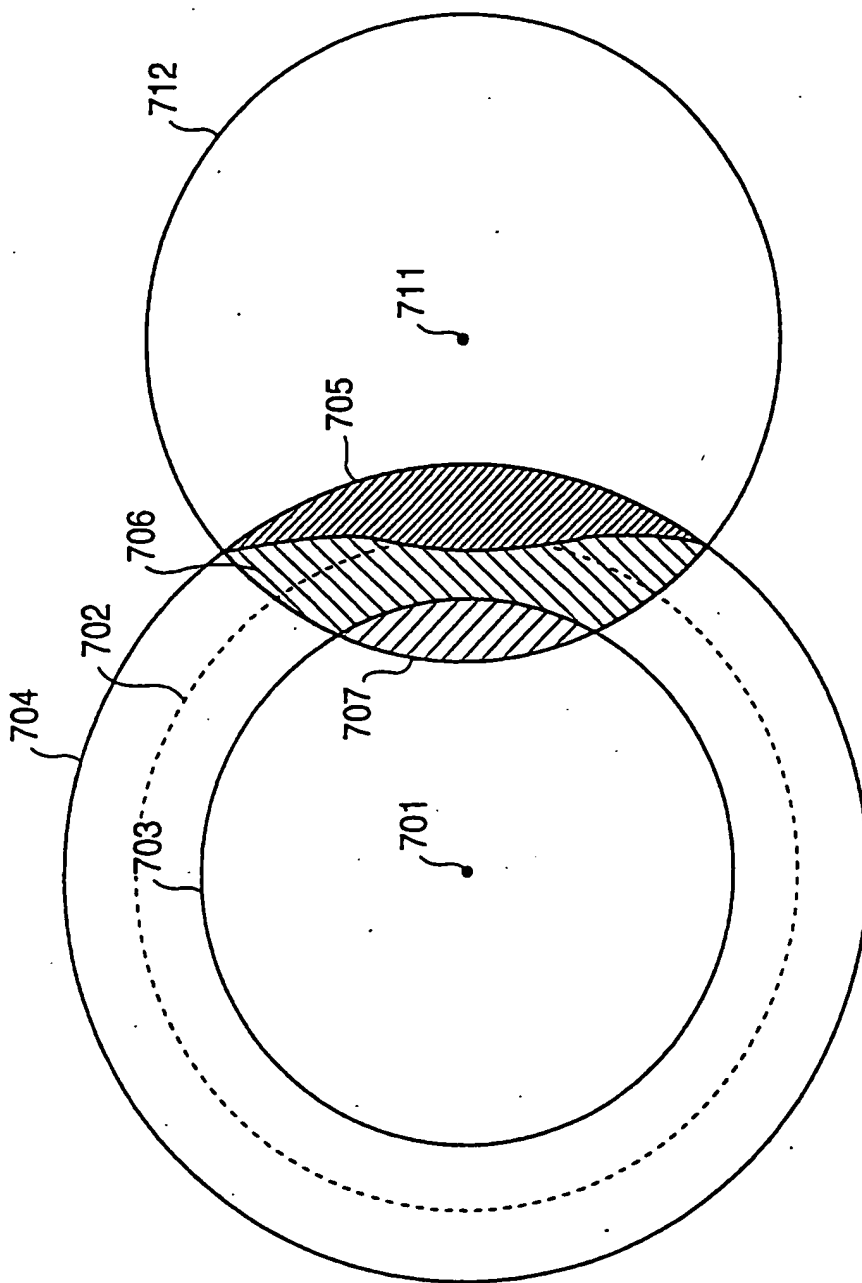




FIG. 53





U.S. Patent

Feb. 4, 1997

Sheet 54 of 178

5,600,672

FIG. 54

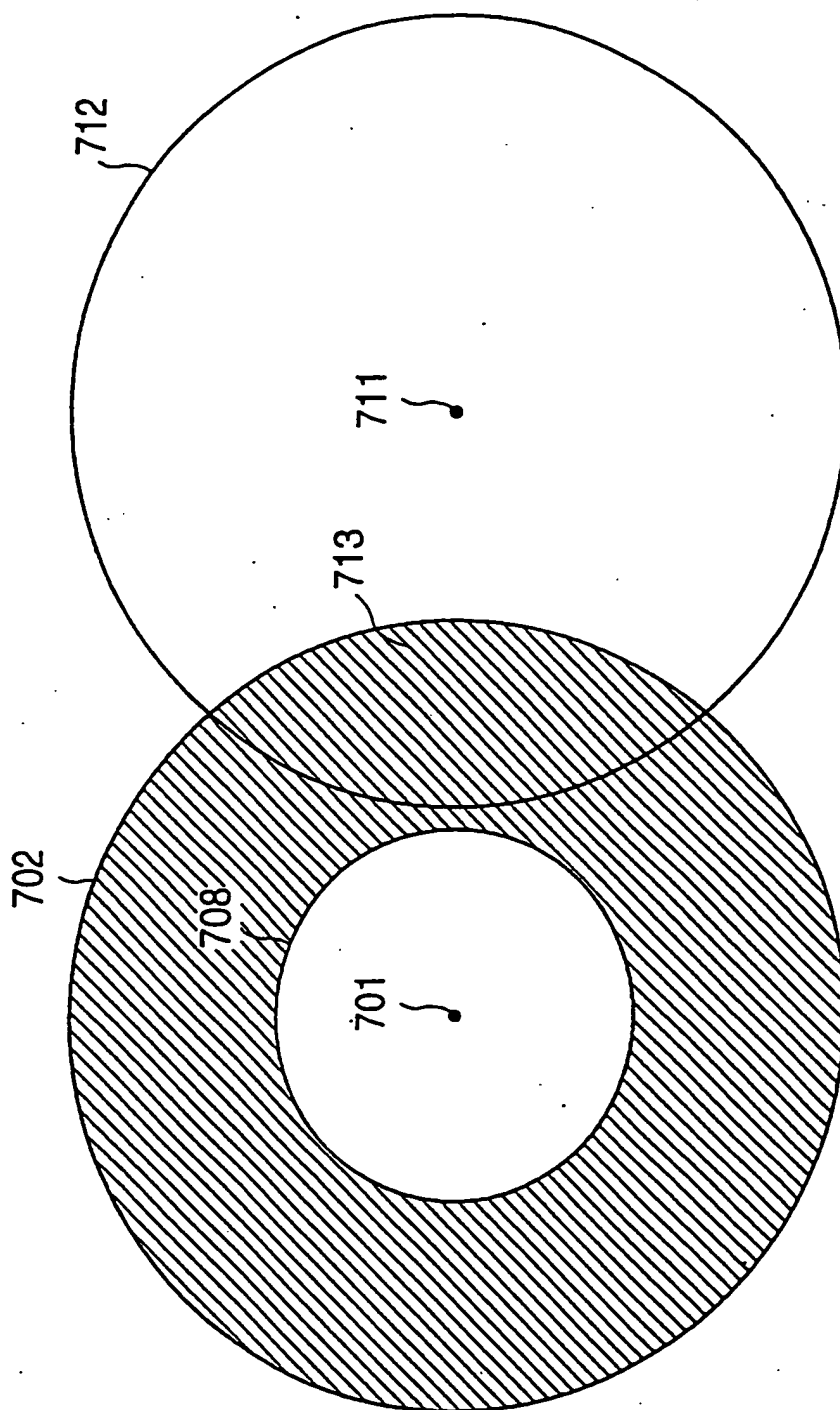




FIG. 55

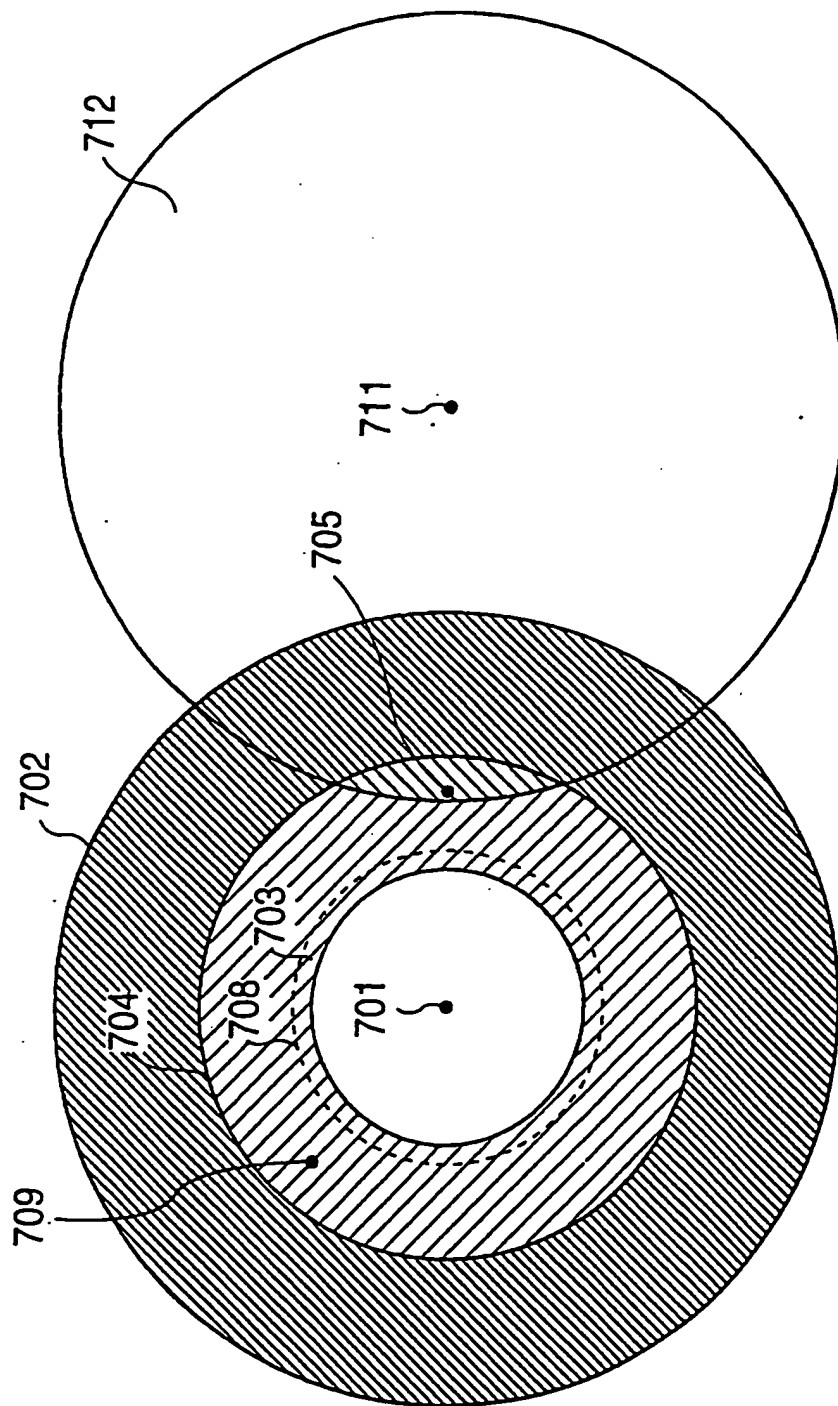




FIG. 56

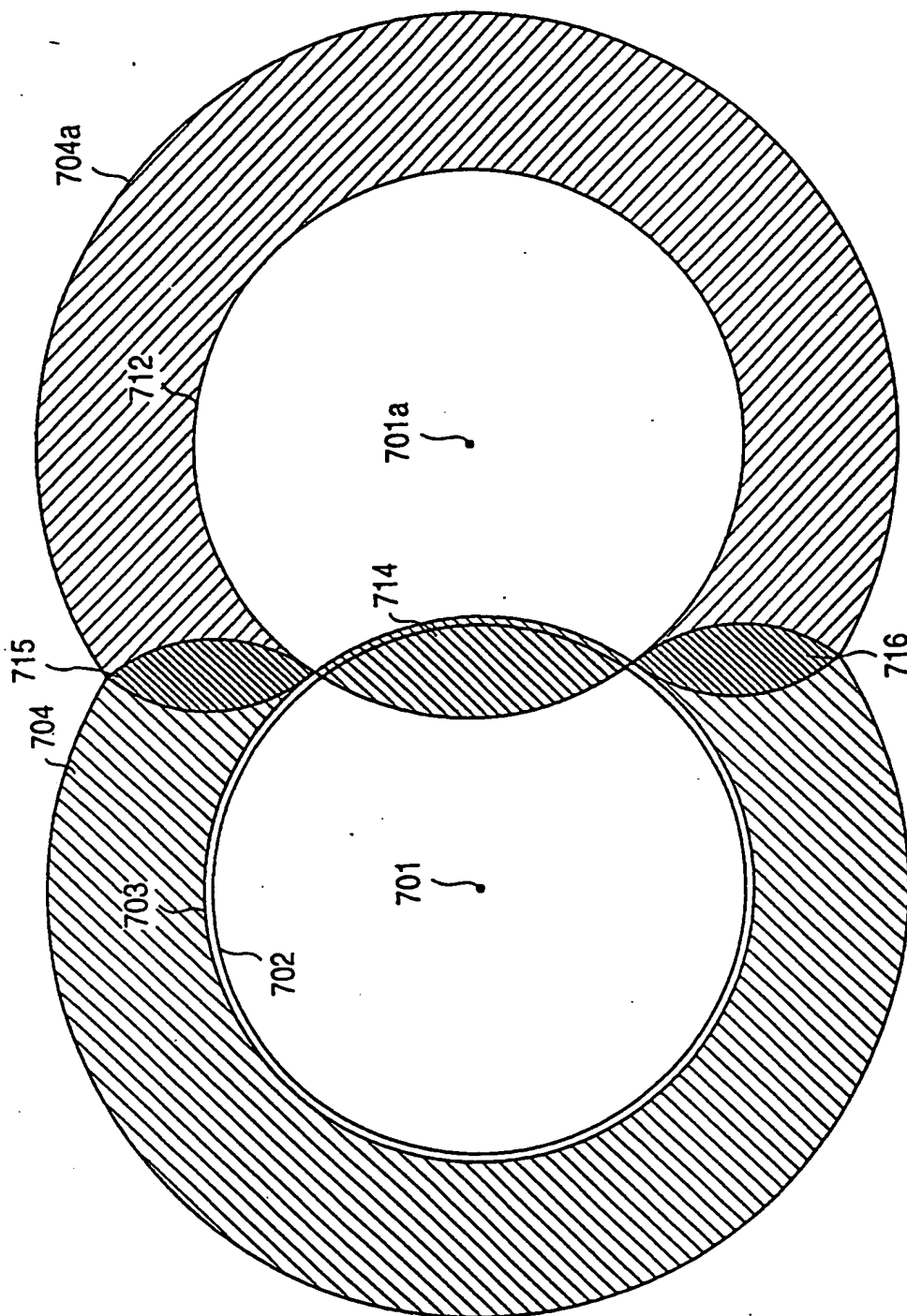






FIG. 57

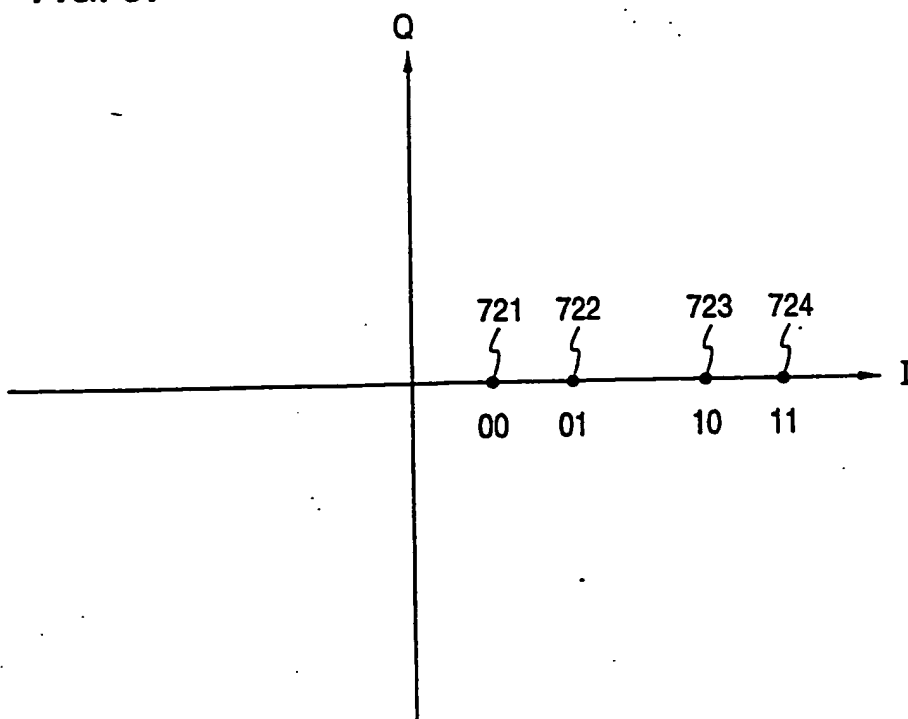


FIG. 58

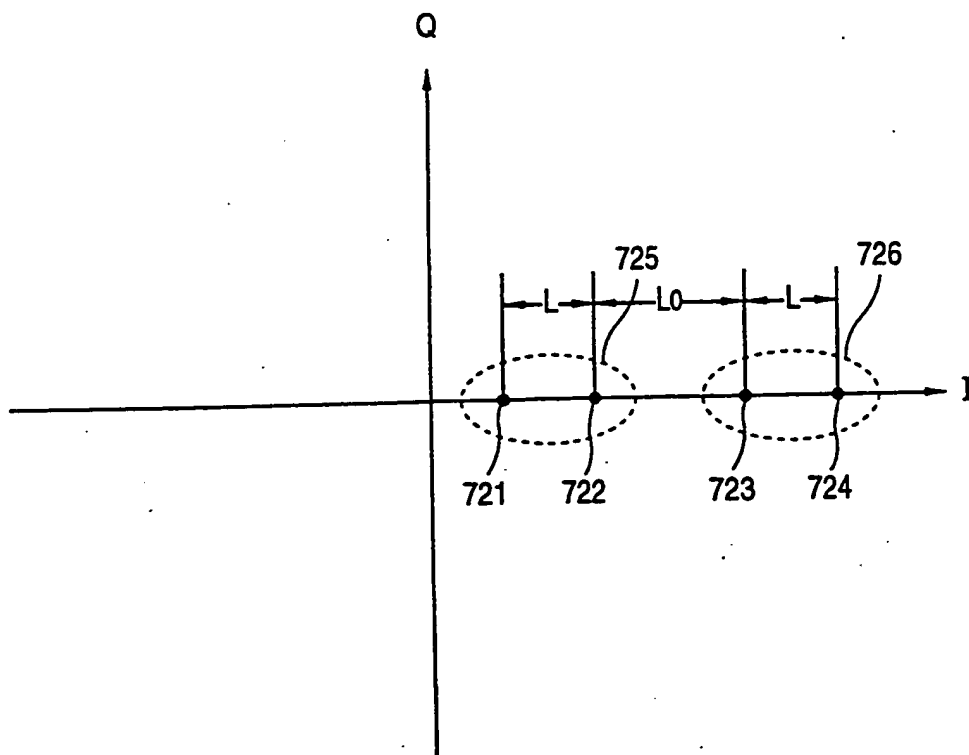




FIG. 59(a)

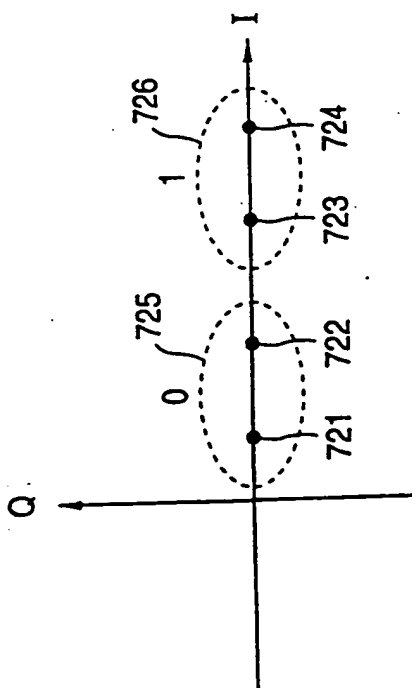


FIG. 59(b)

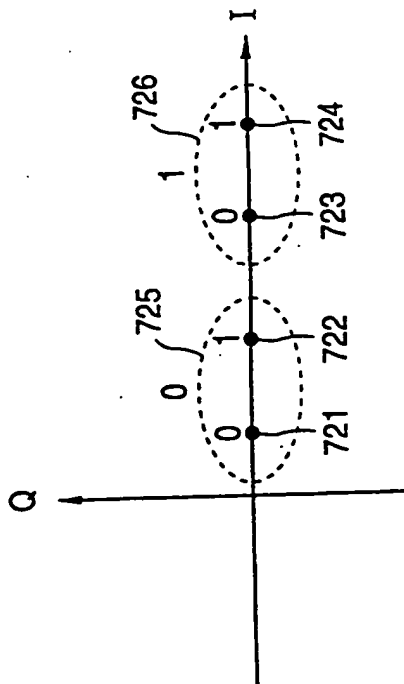


FIG. 59(c)

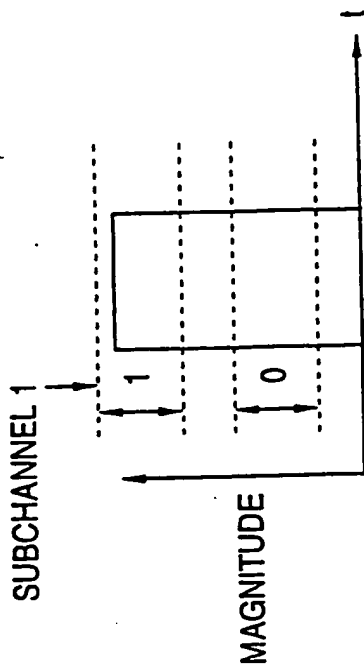
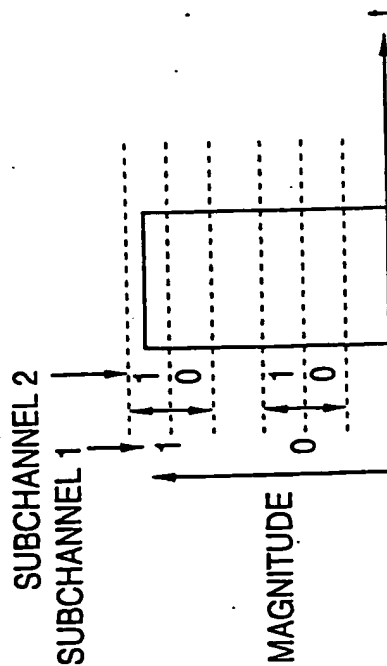


FIG. 59(d)





U.S. Patent

Feb. 4, 1997

Sheet 59 of 178

5,600,672

FIG. 60

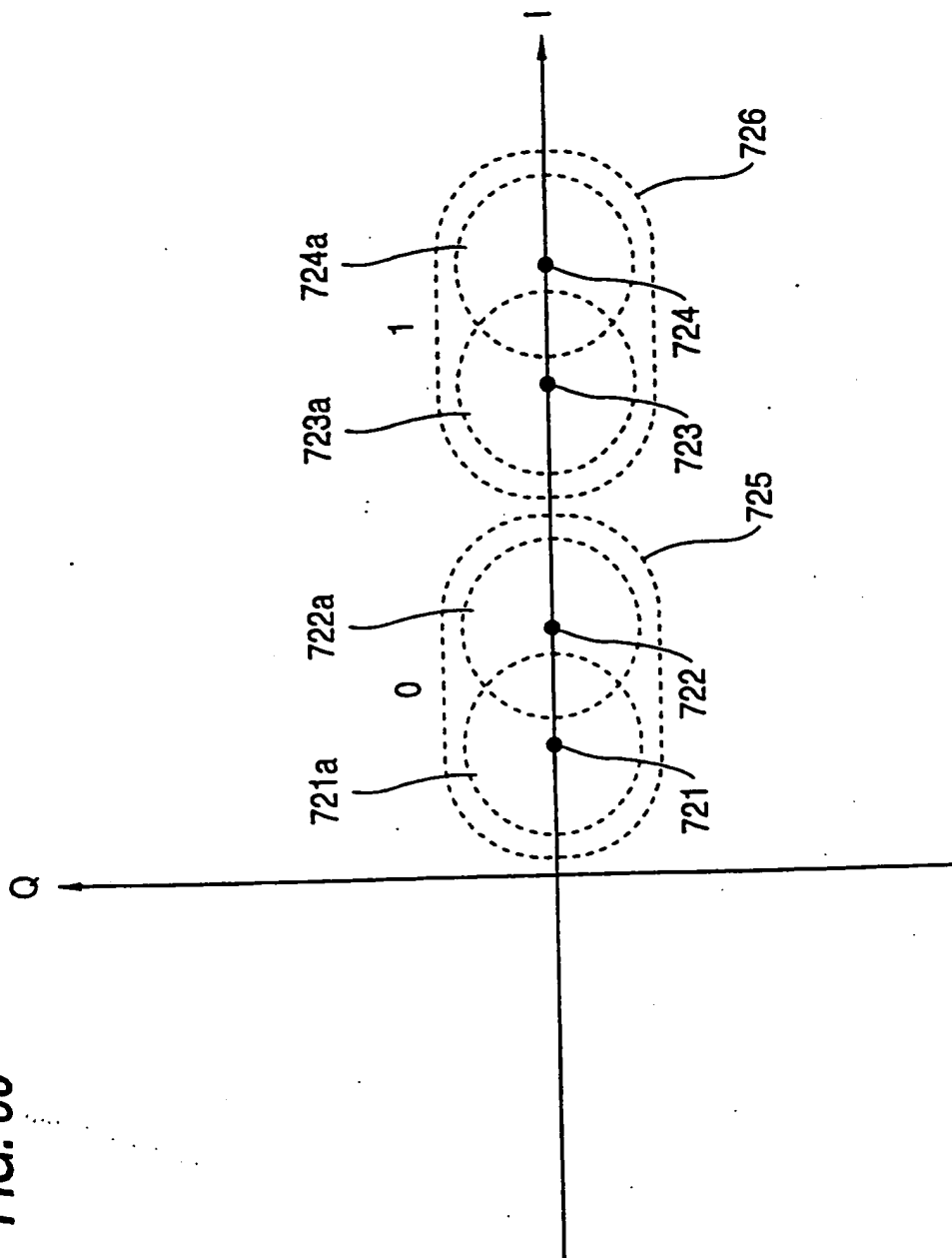




FIG. 61

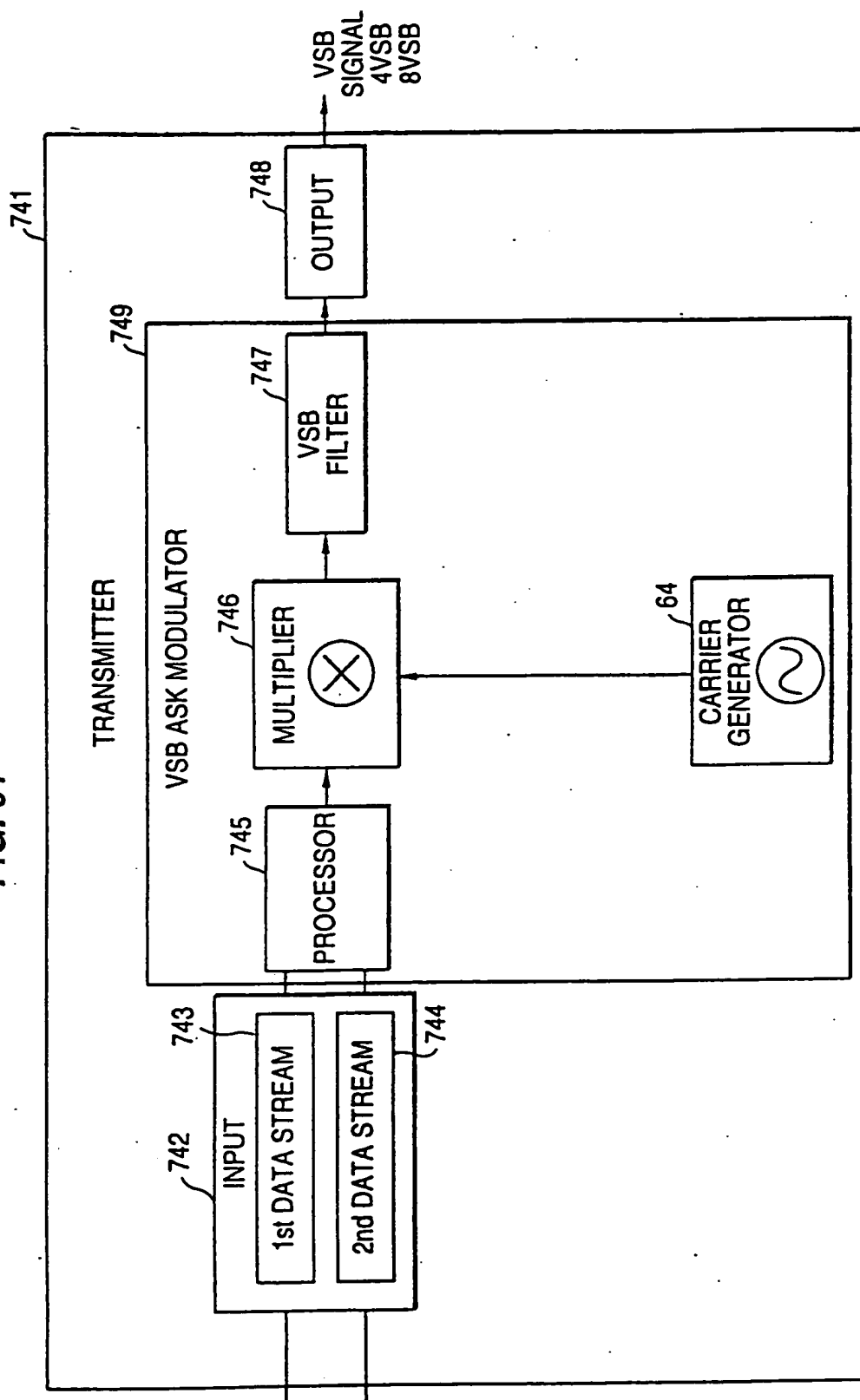




FIG. 62(a)

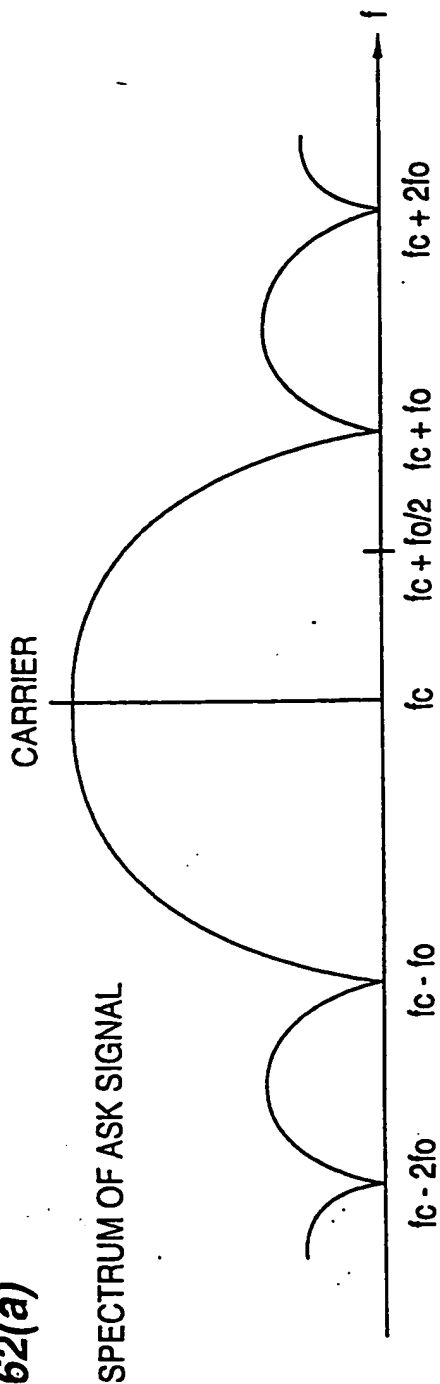


FIG. 62(b)

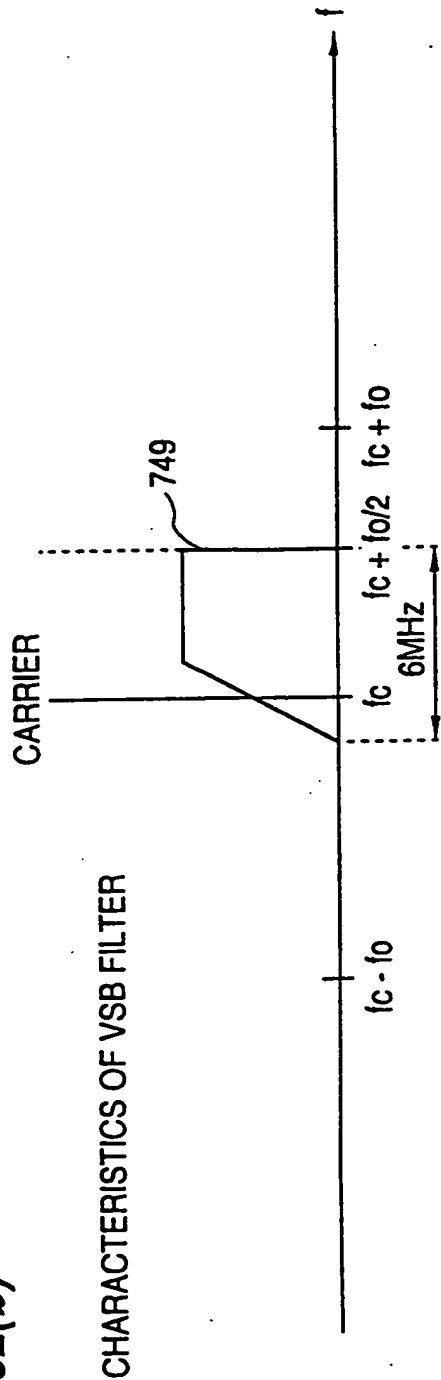




FIG. 63

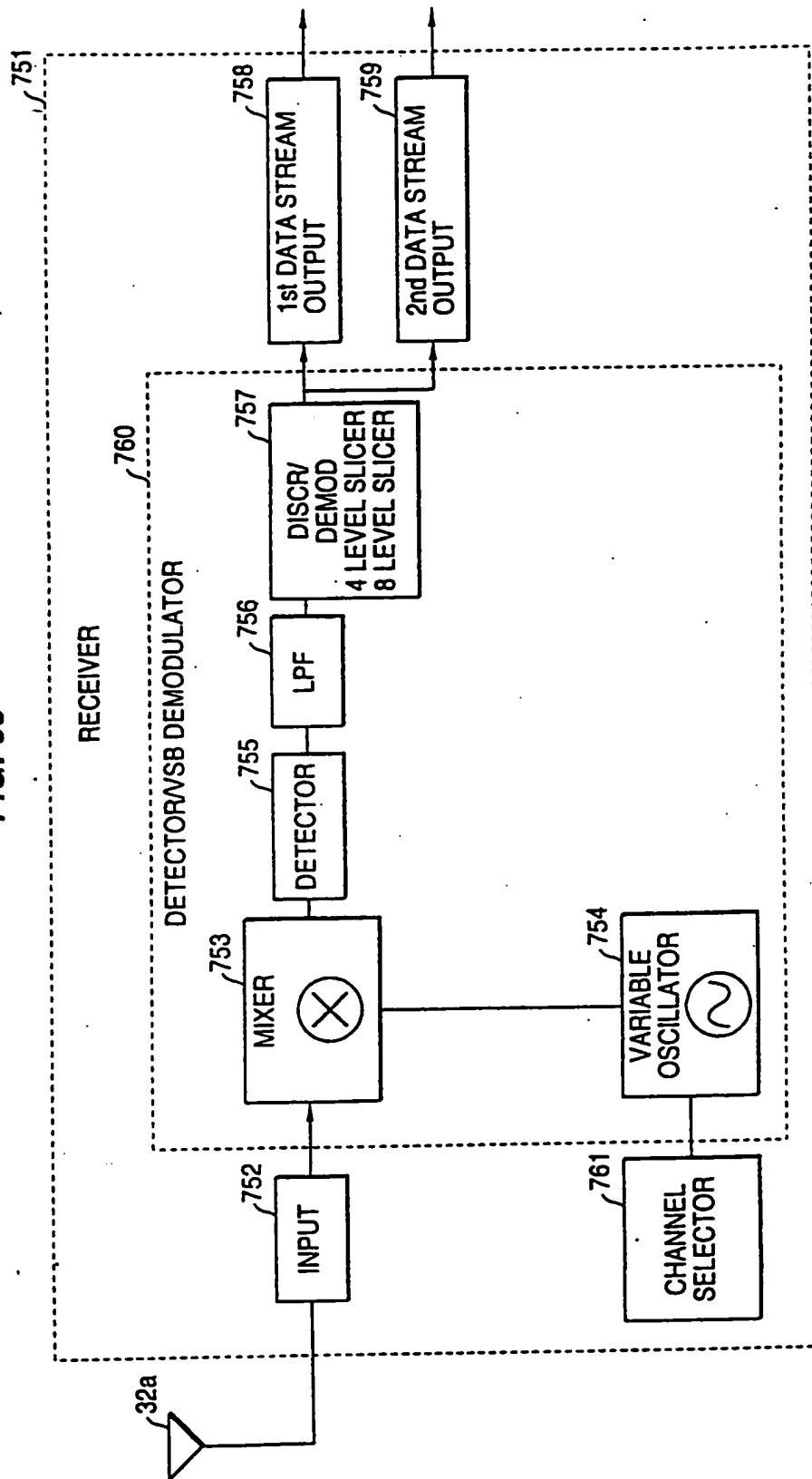




FIG. 64

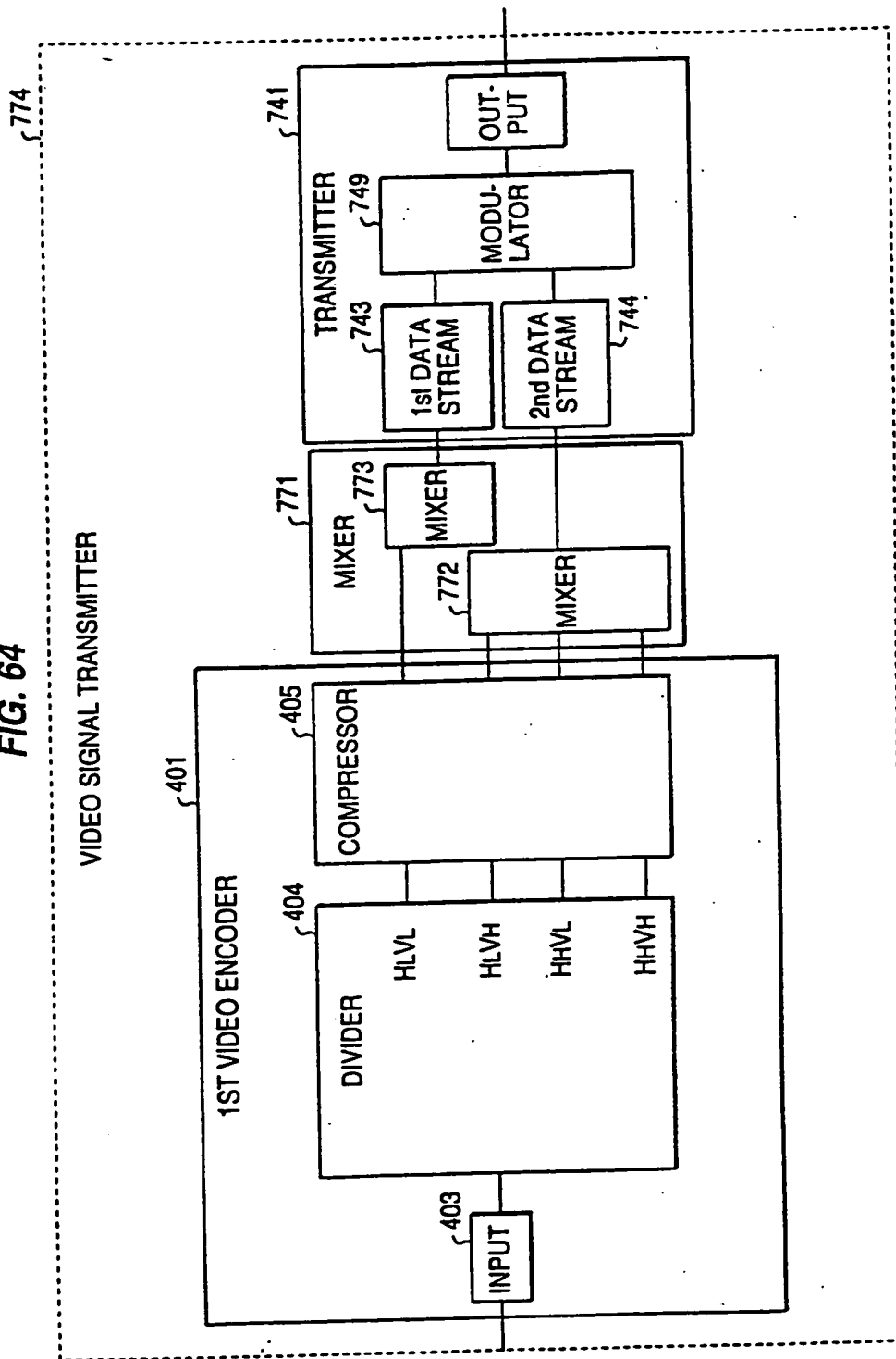




FIG. 65

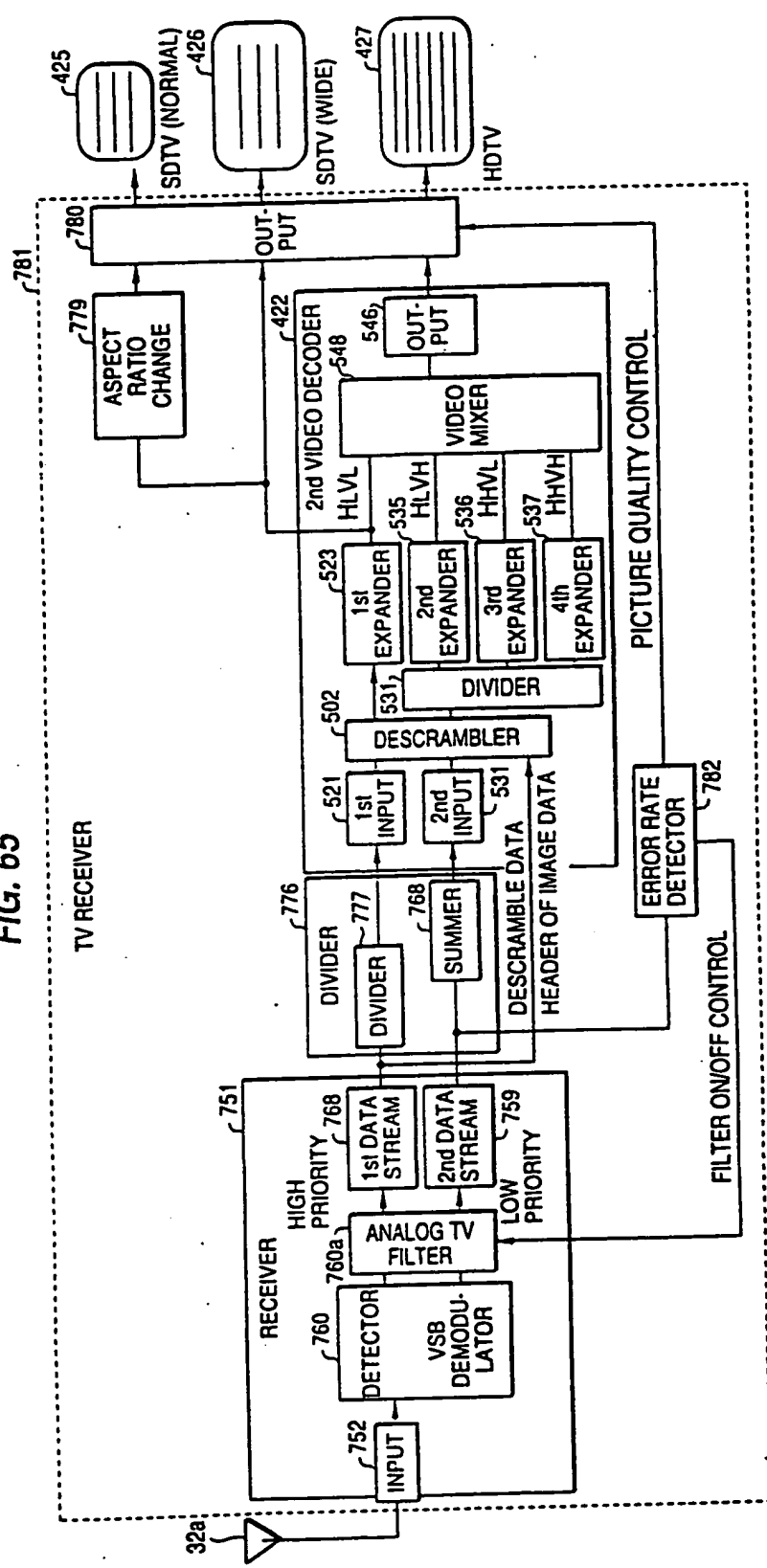






FIG. 66

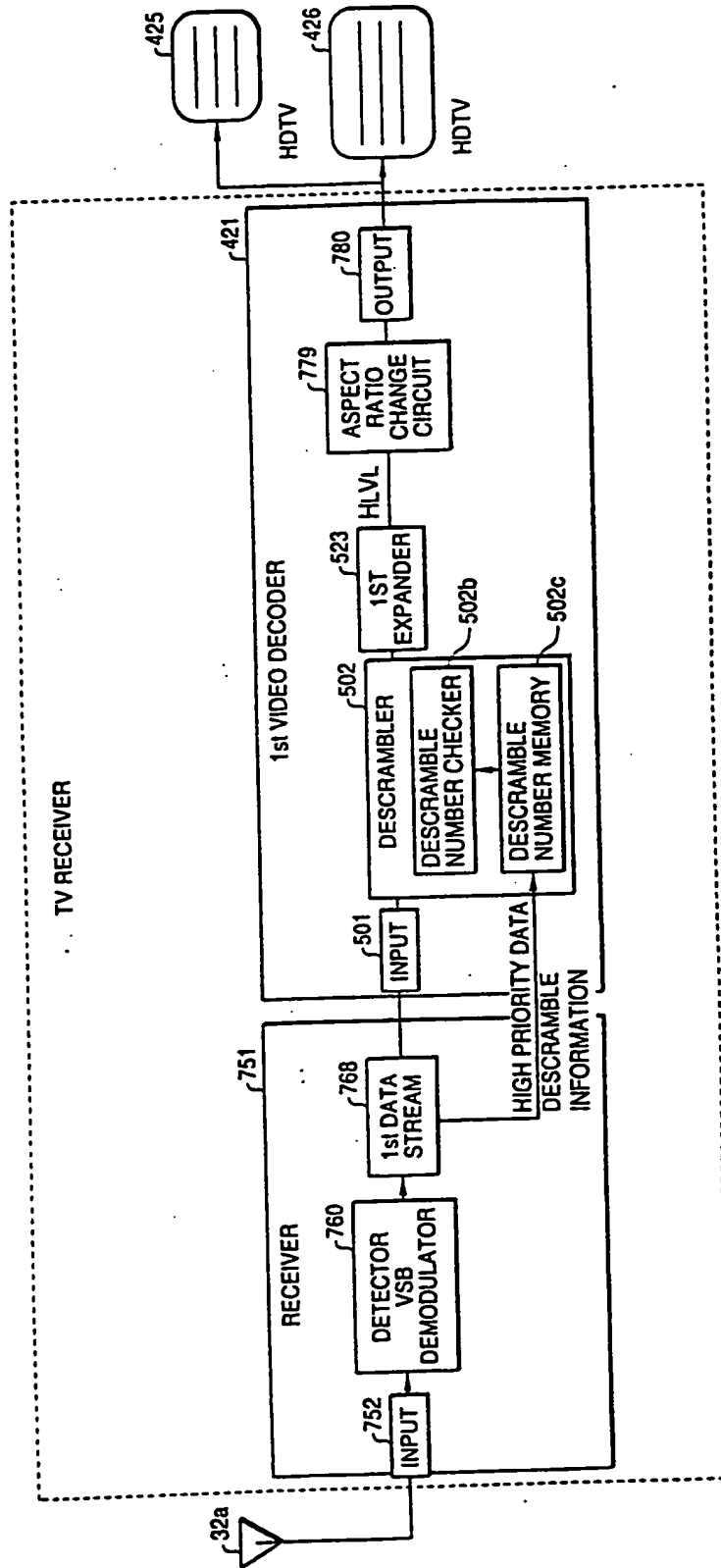




FIG. 67

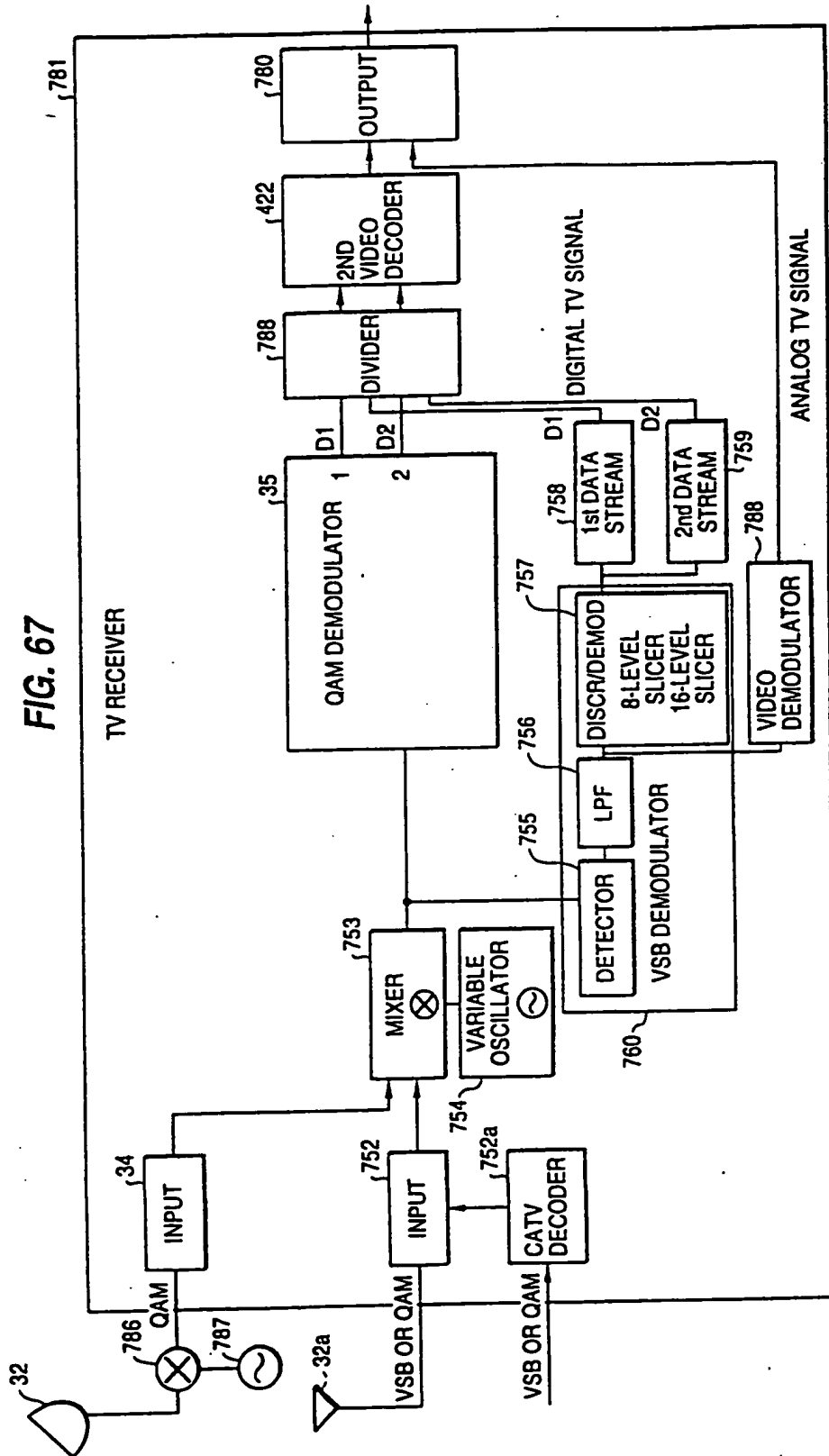




FIG. 68(a)

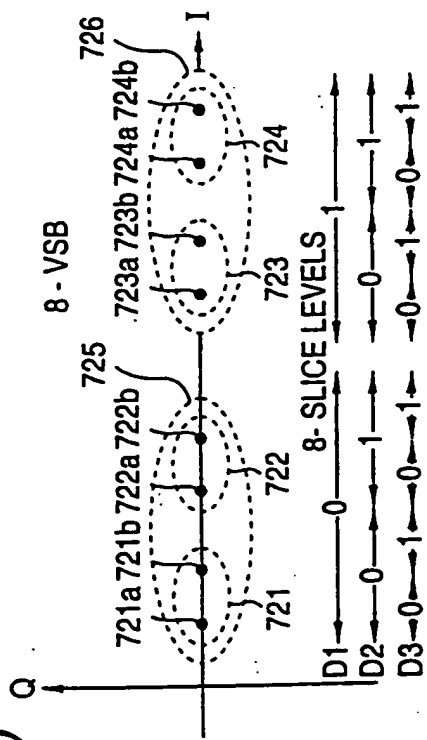


FIG. 68(b)

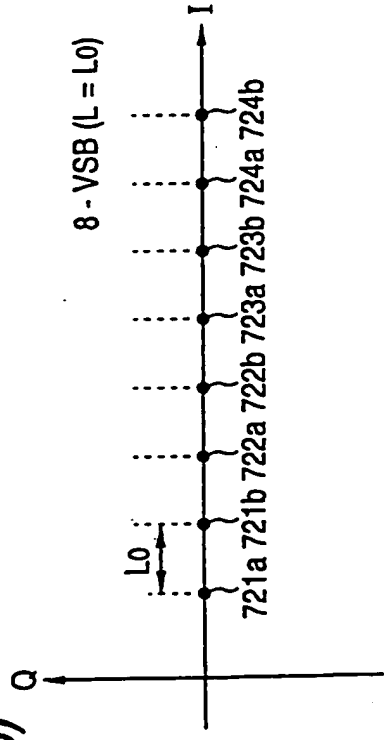


FIG. 68(c)

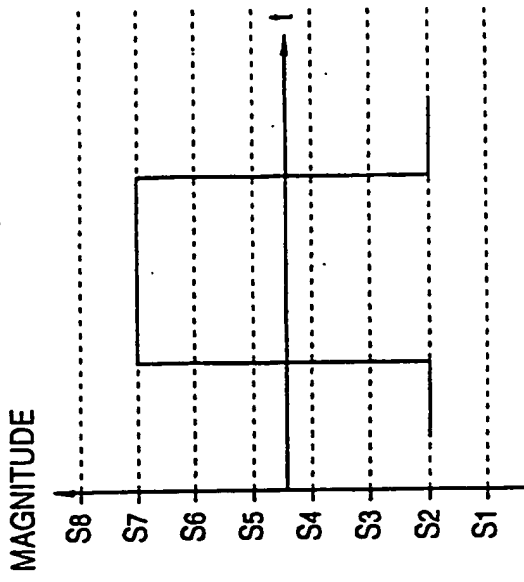




FIG. 69

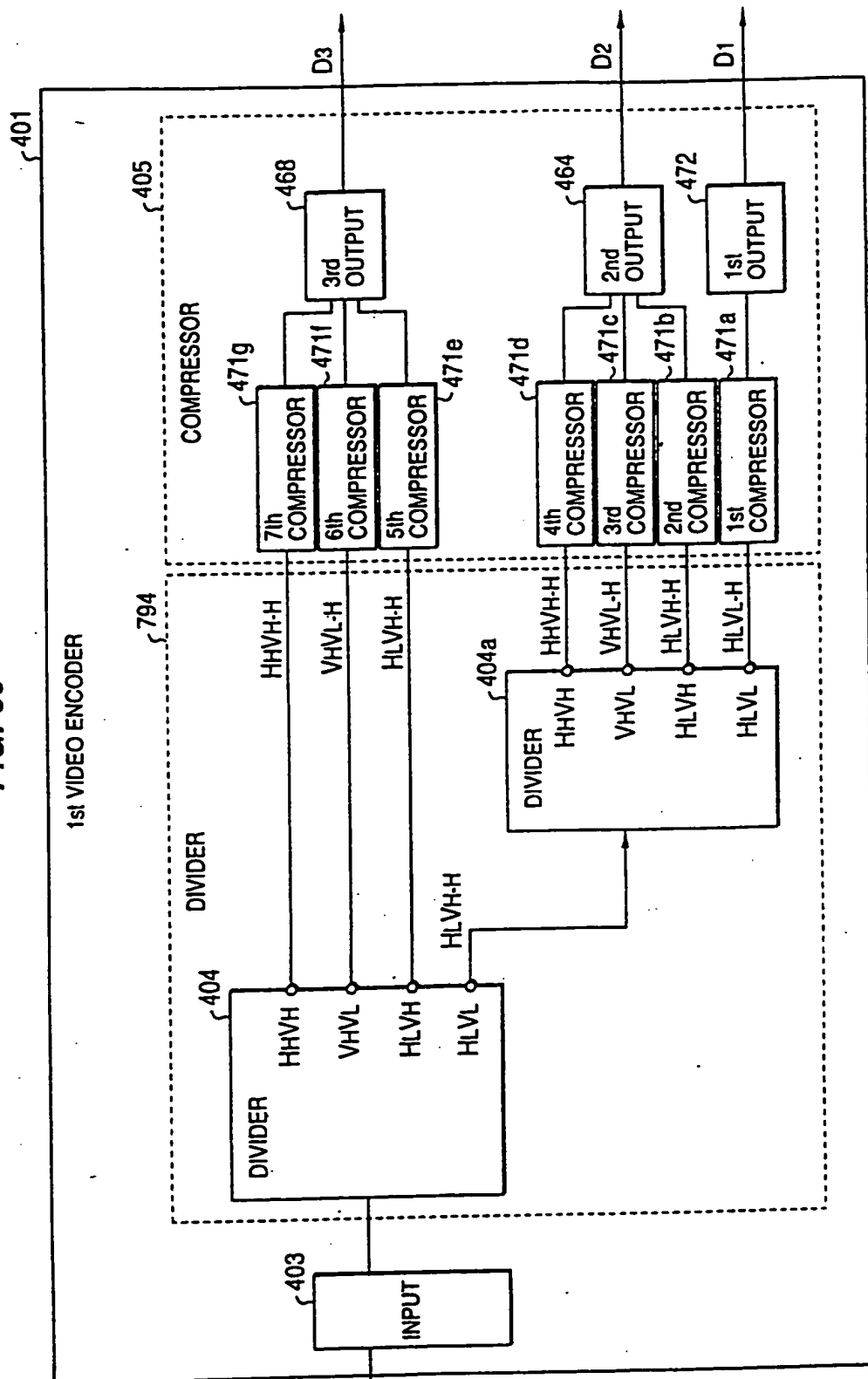




FIG. 70

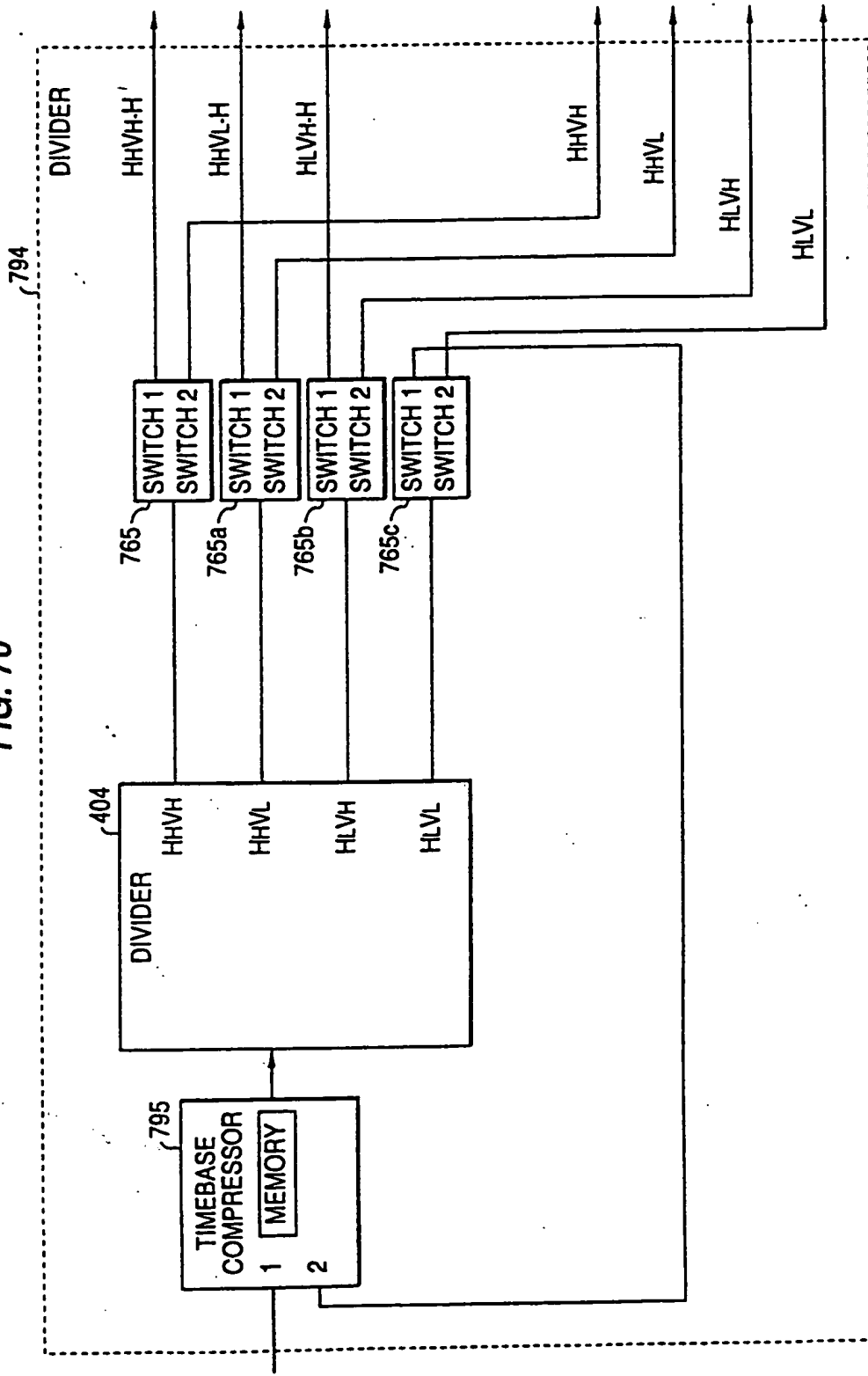




FIG. 71

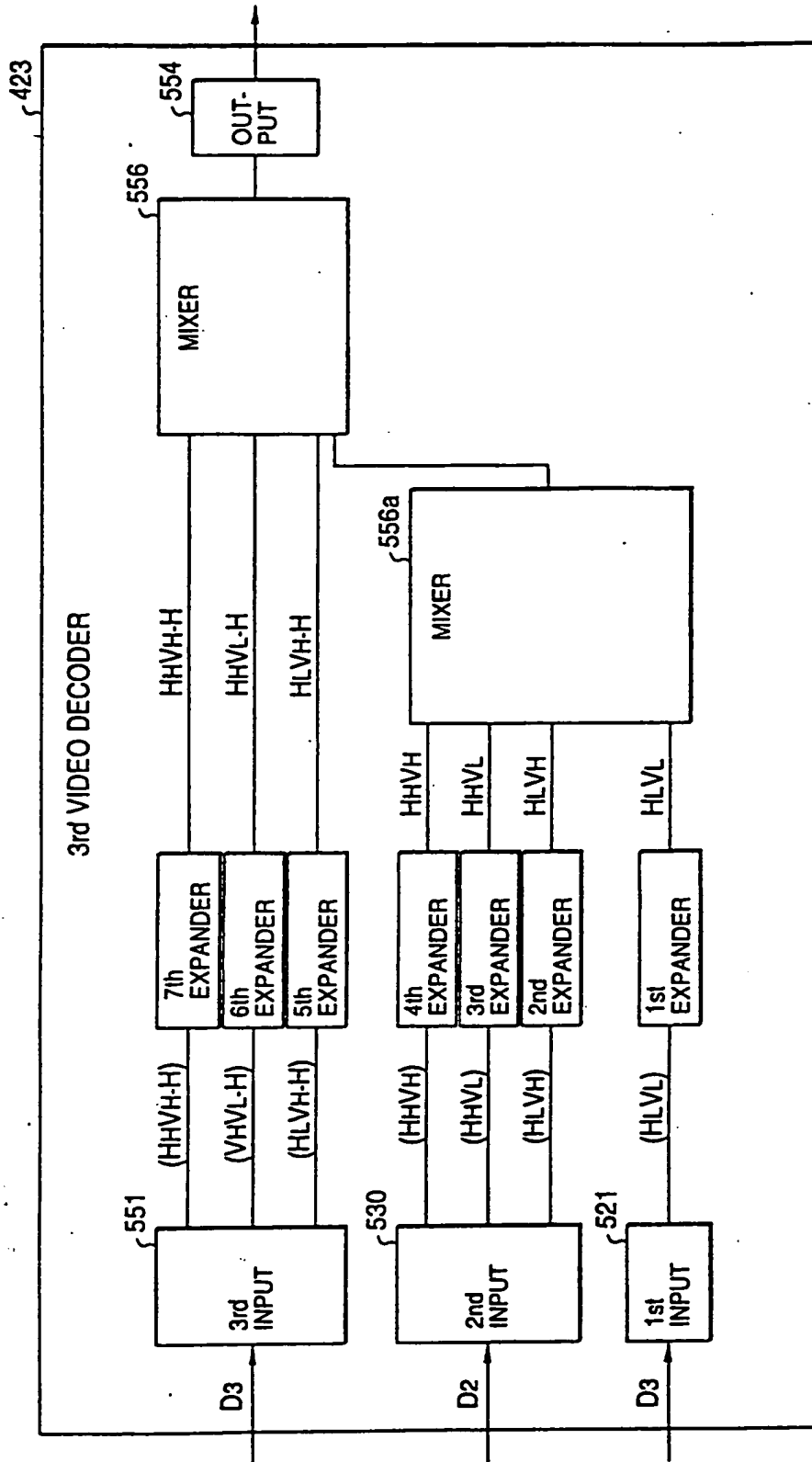




FIG. 72

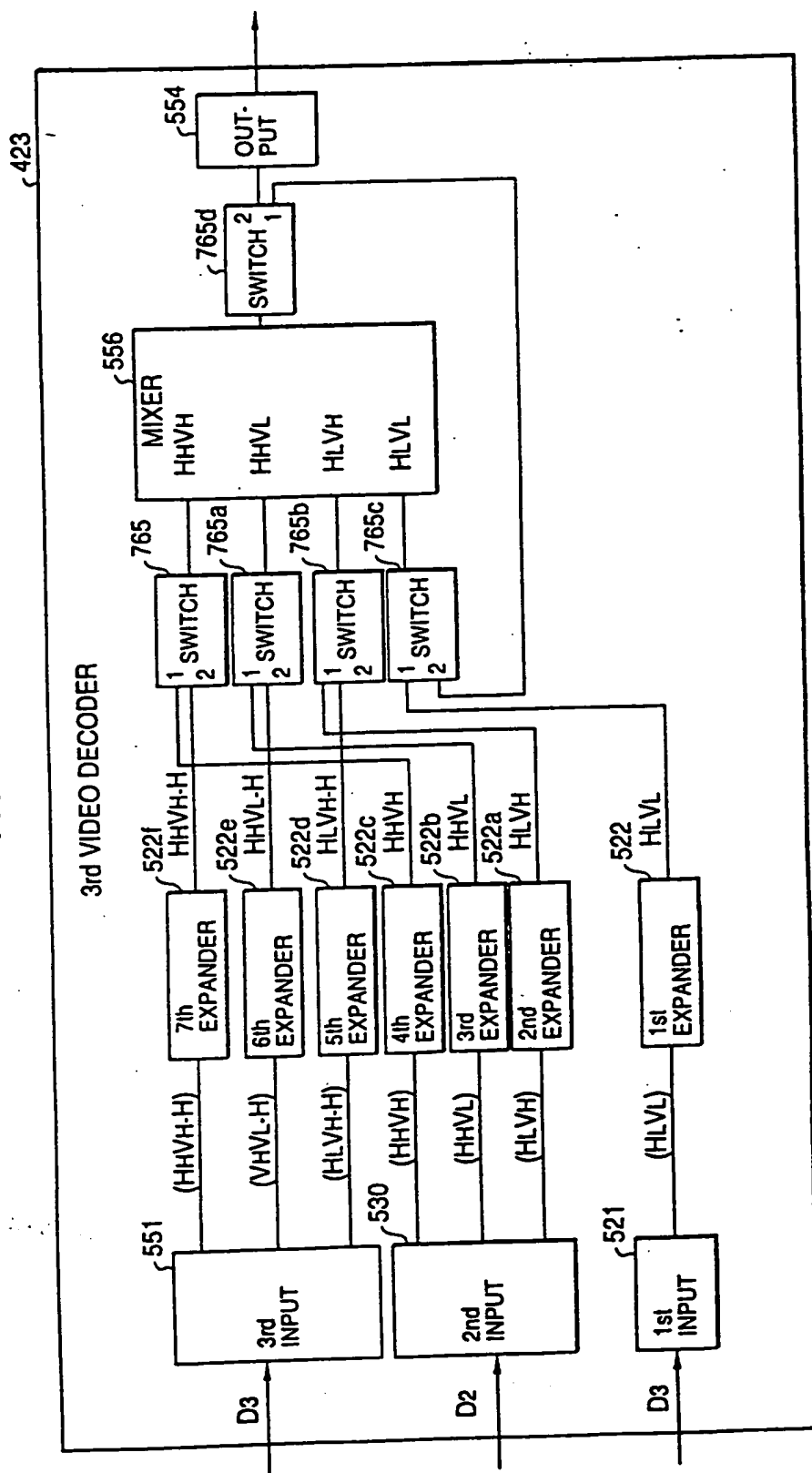




FIG. 73

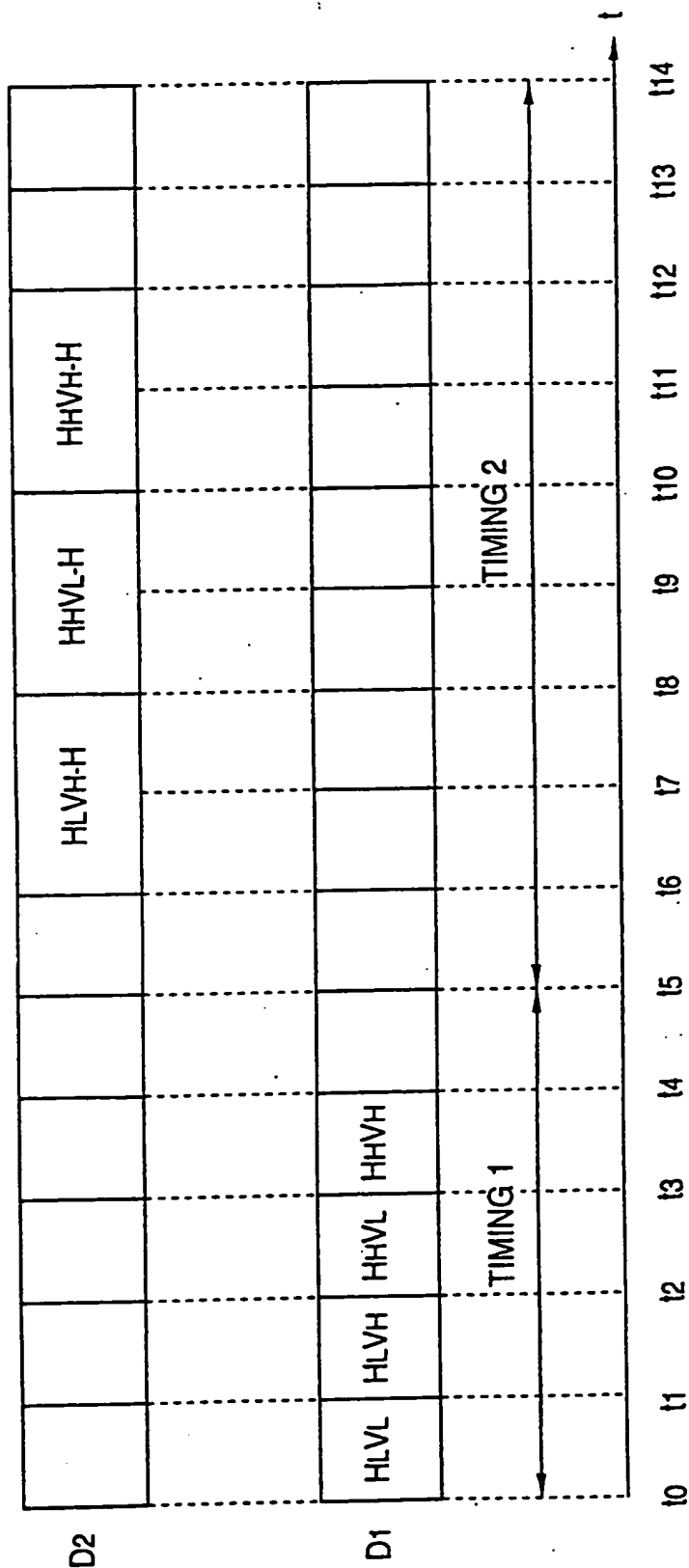






FIG. 74(a)

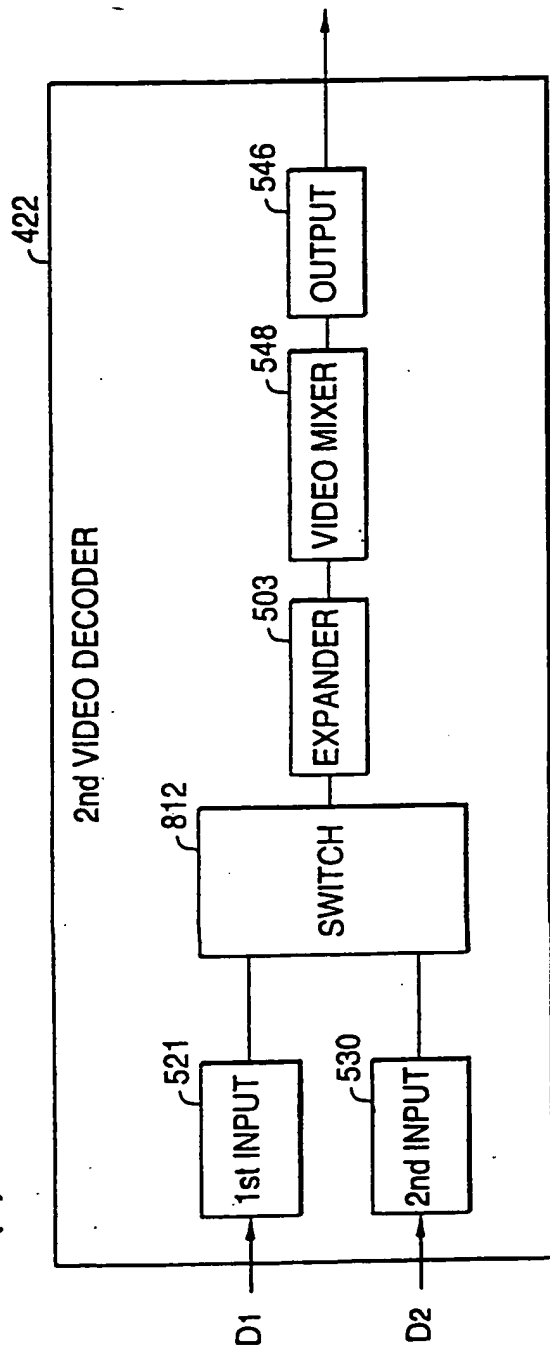
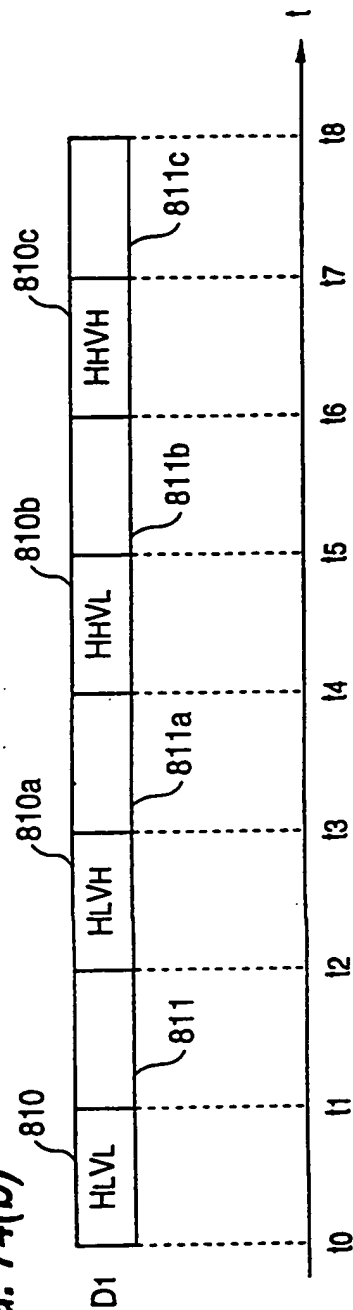


FIG. 74(b)



|    |  |  |         |         |         |         |         |         |
|----|--|--|---------|---------|---------|---------|---------|---------|
| D2 |  |  | HLVH(1) | HLVH(2) | HHVL(1) | HHVL(2) | HHVH(1) | HHVH(2) |
| D1 |  |  | HLVL(1) | HLVL(2) |         |         |         |         |

**FIG. 76**

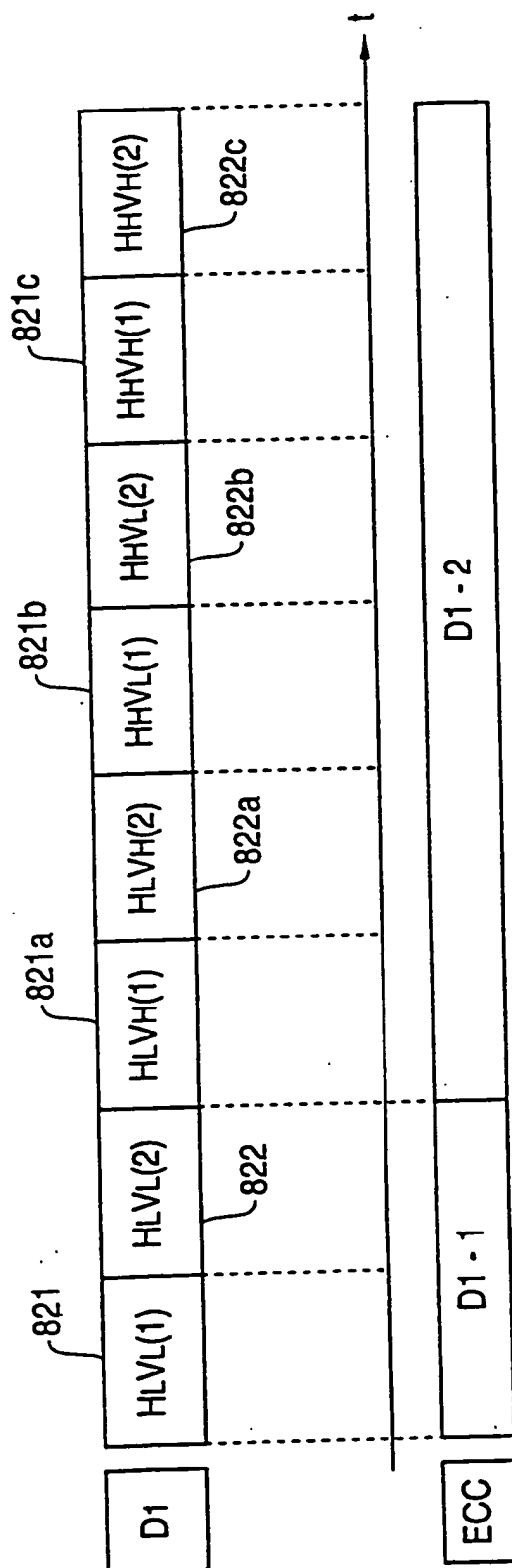




FIG. 77

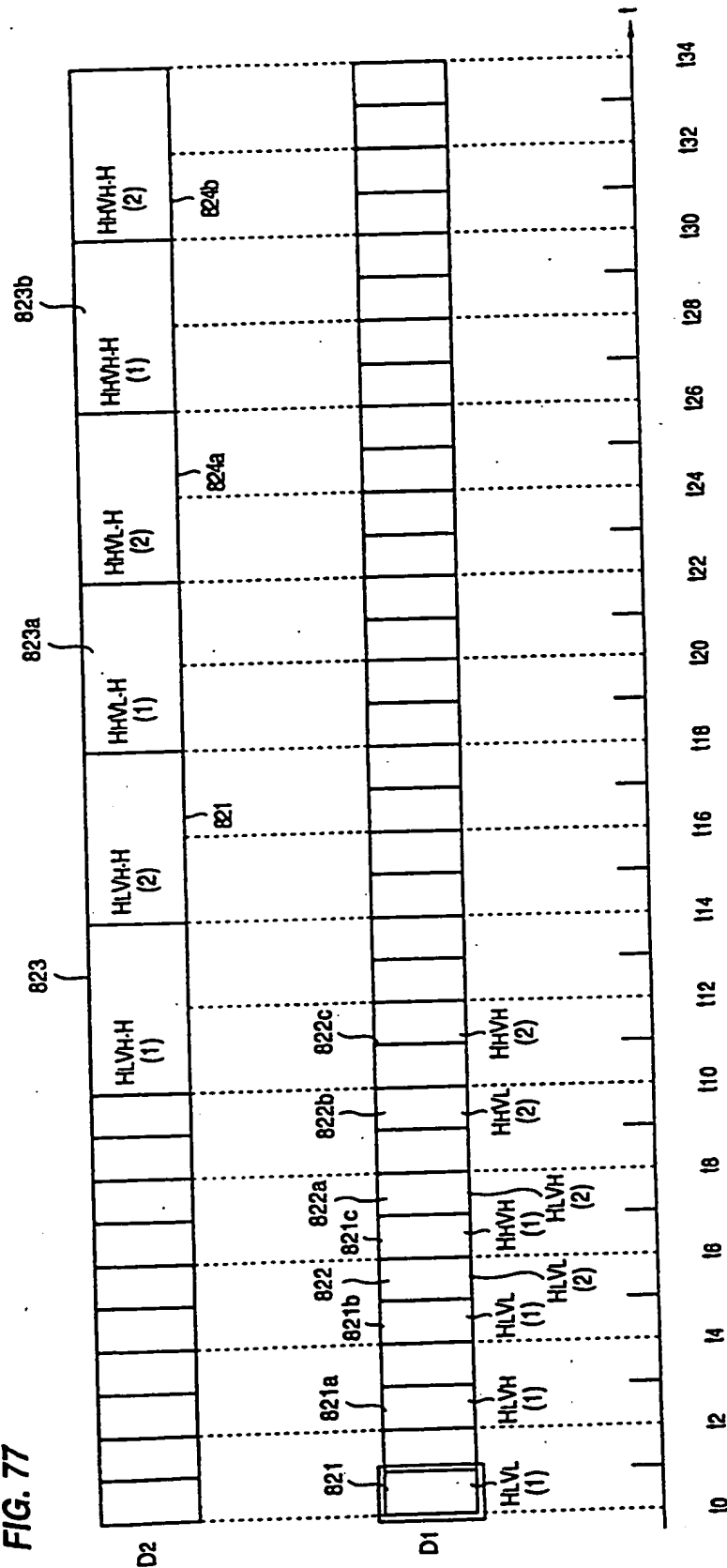




FIG. 78

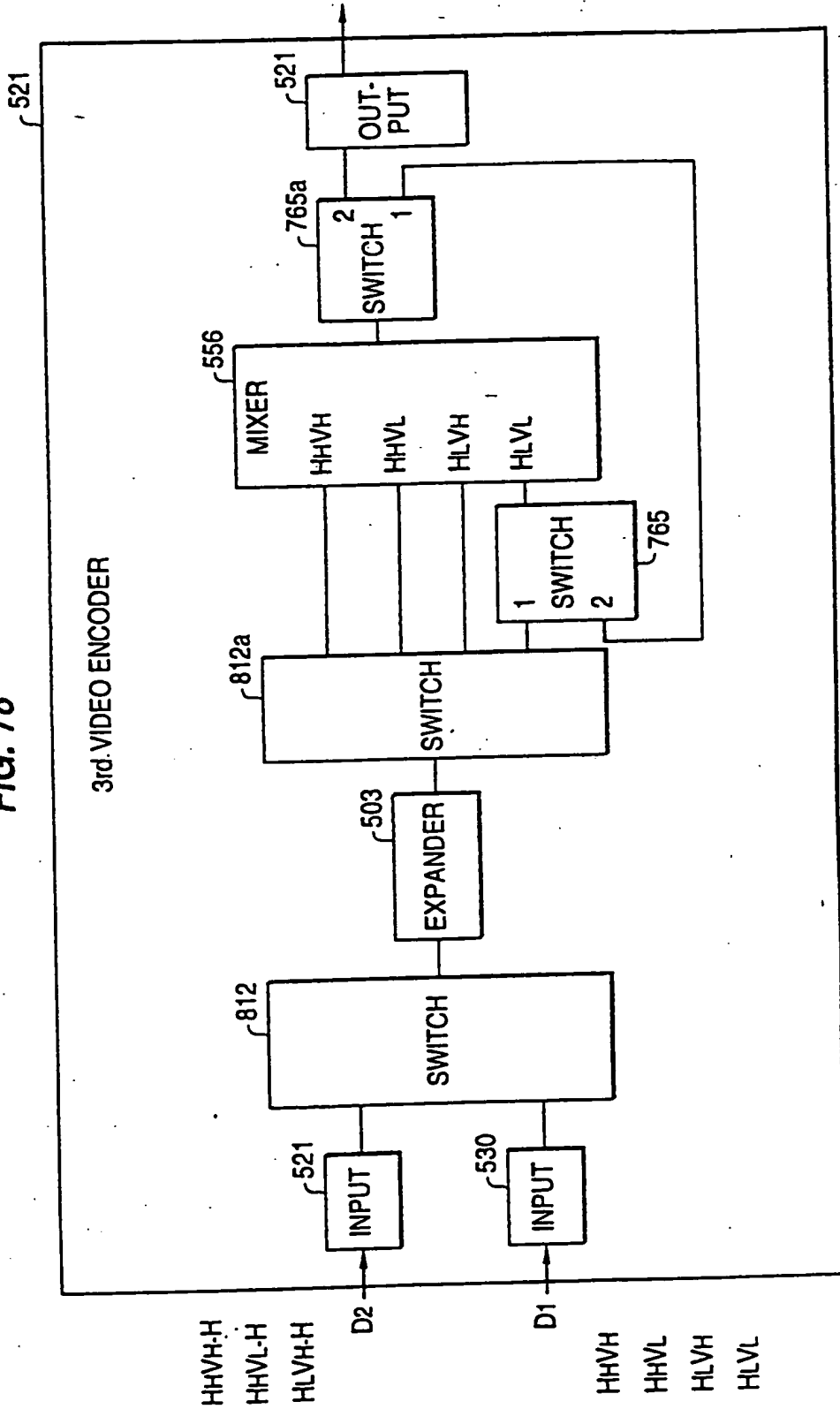






FIG. 80

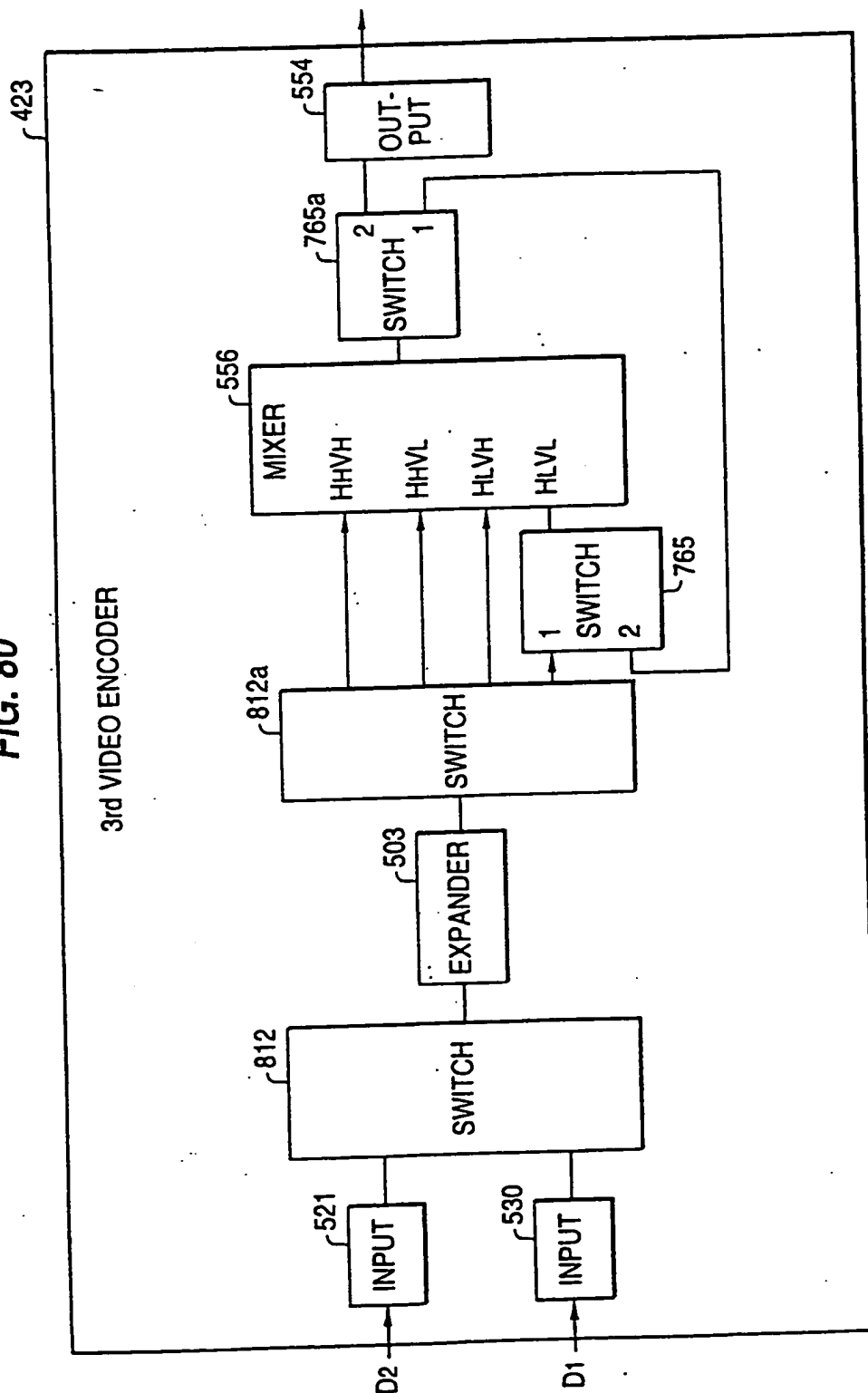




FIG. 81

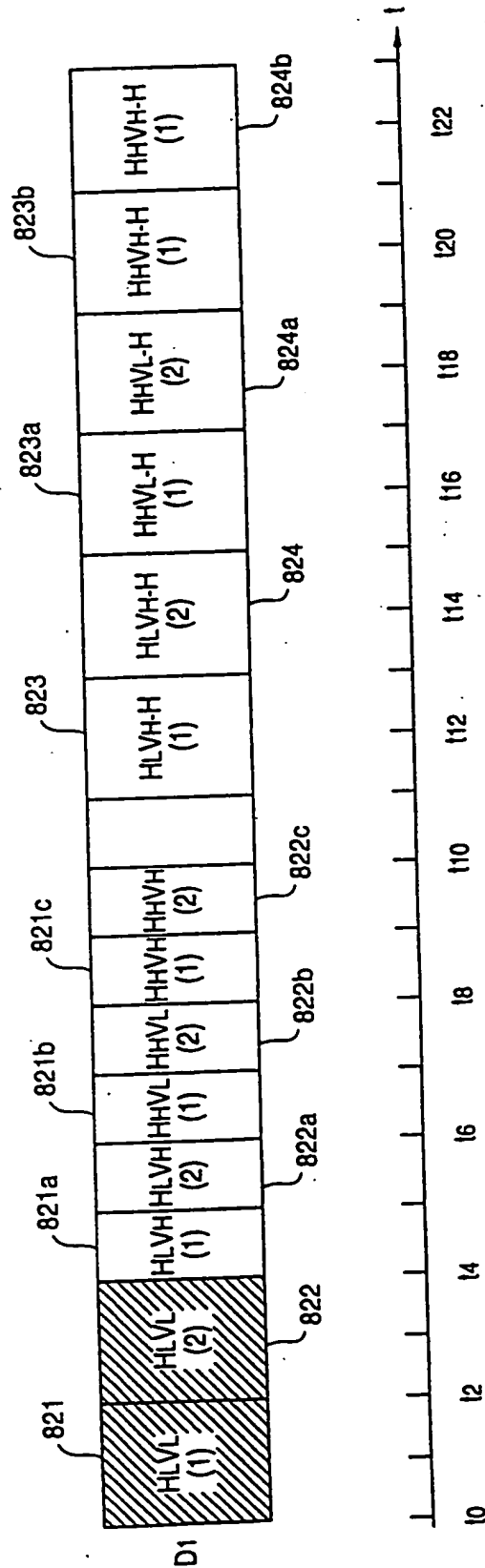






FIG. 82

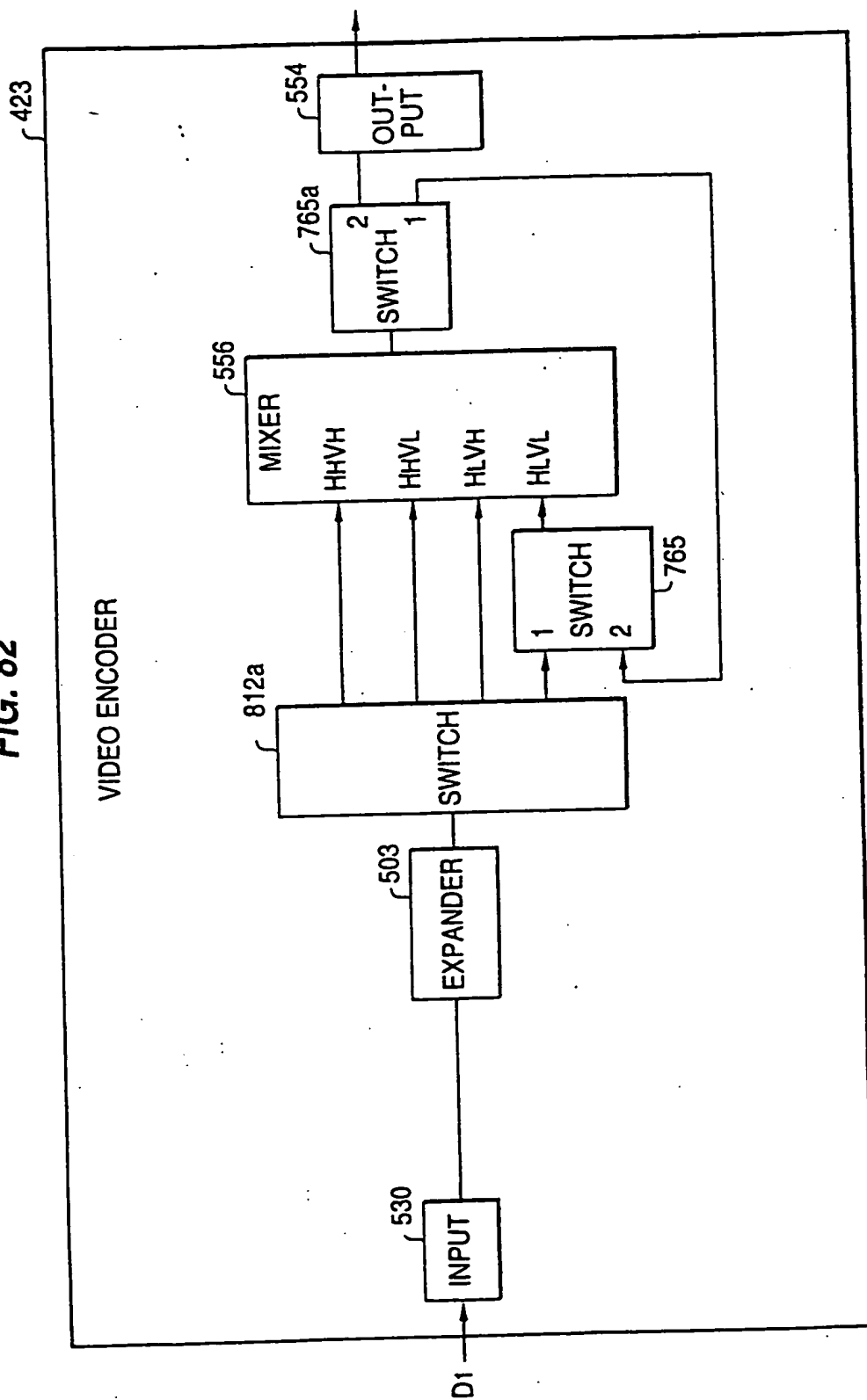




FIG. 83

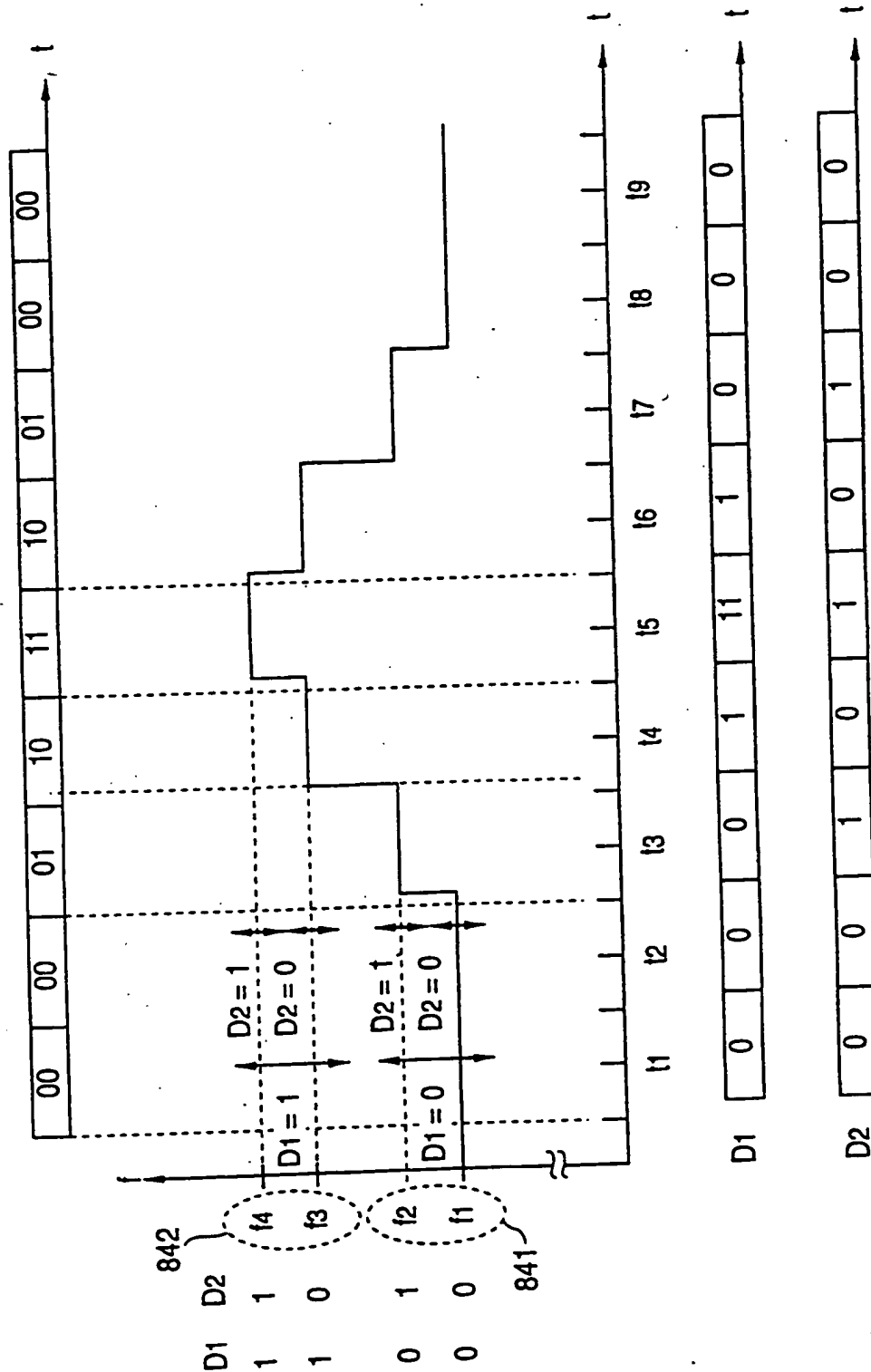




FIG. 84

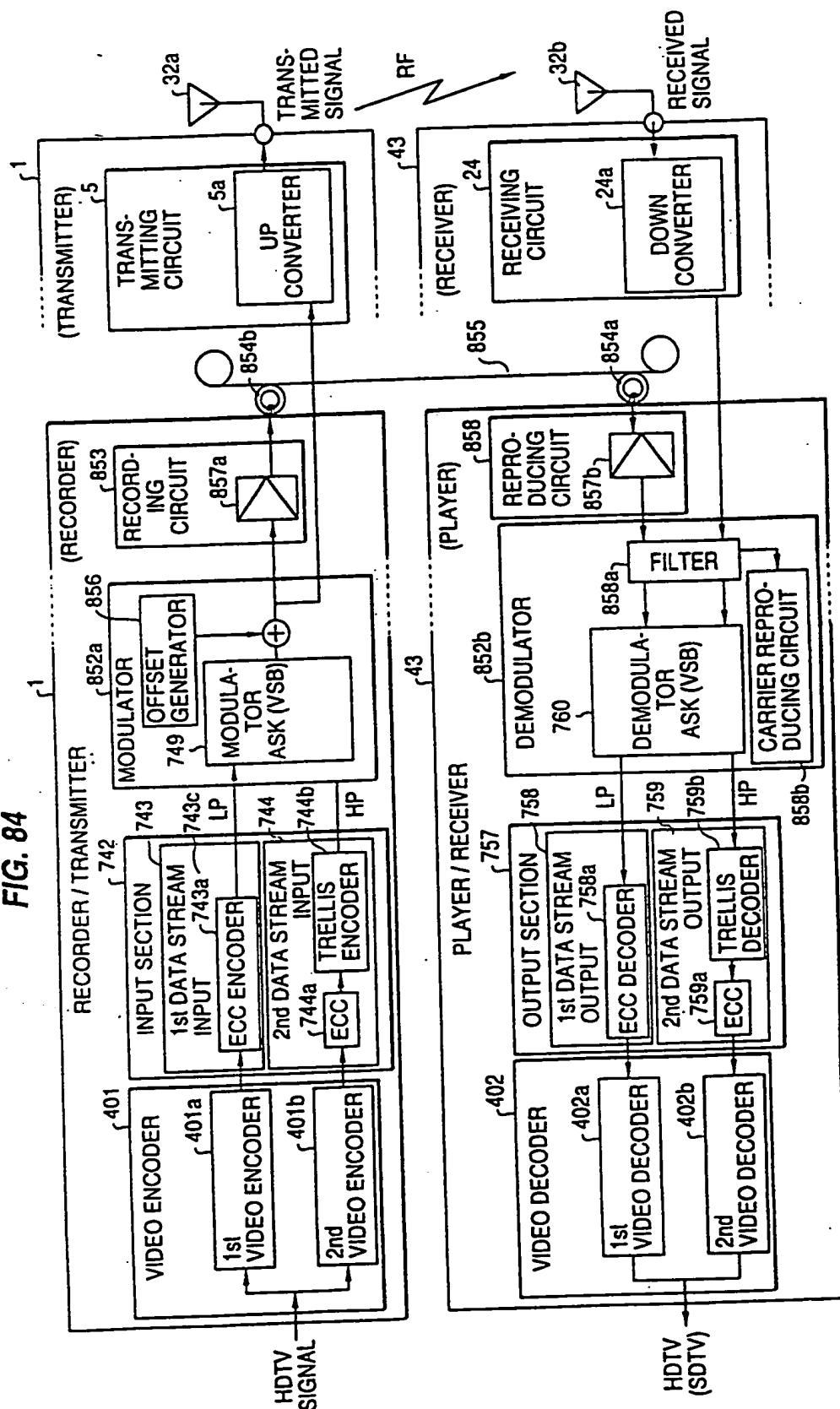




FIG. 85

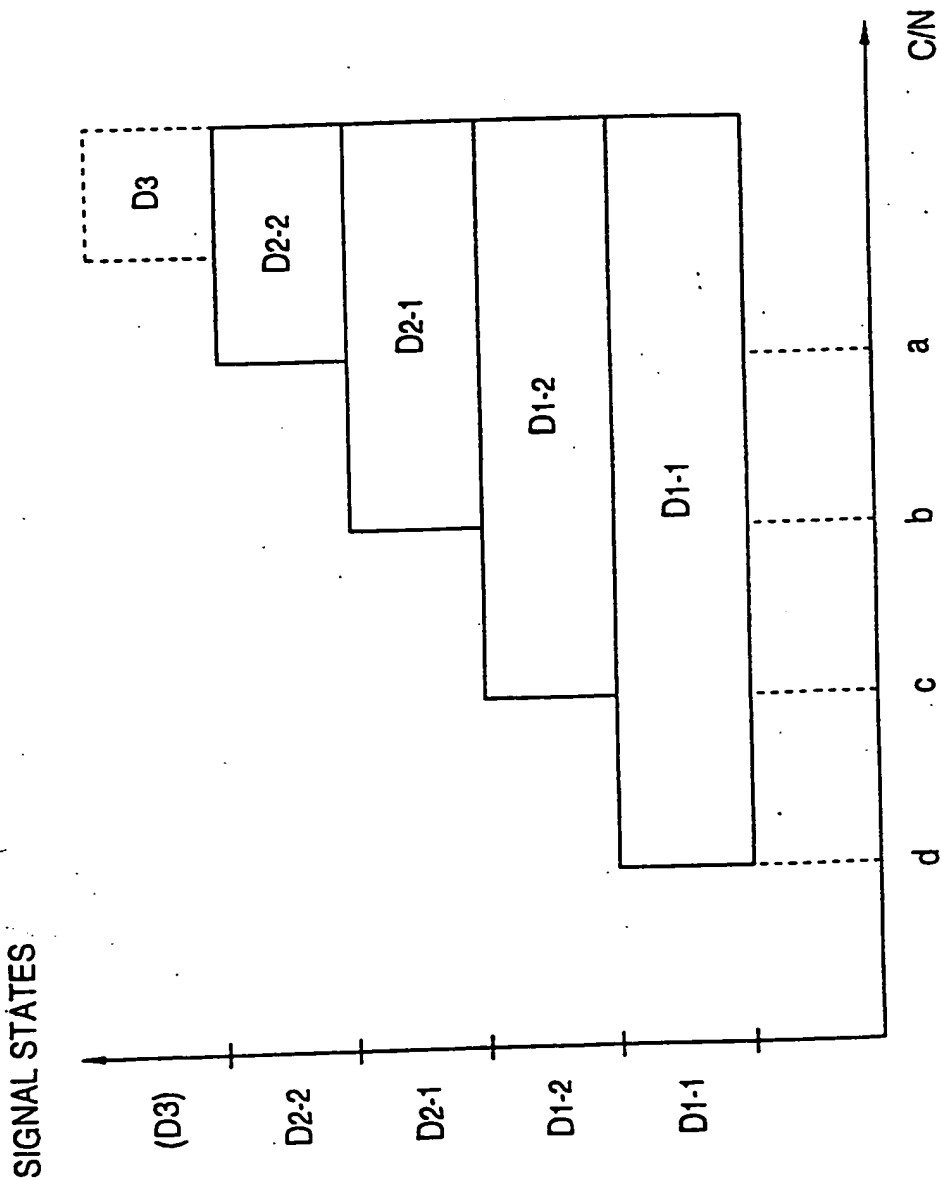




FIG. 86

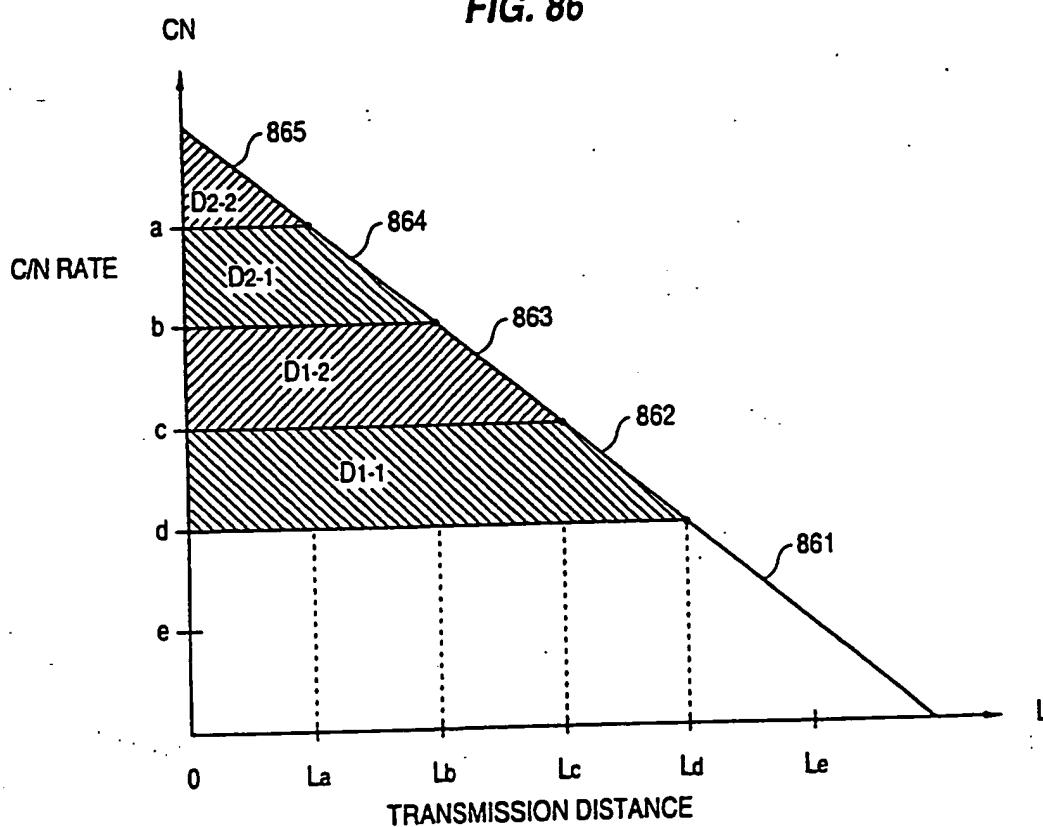




FIG. 87

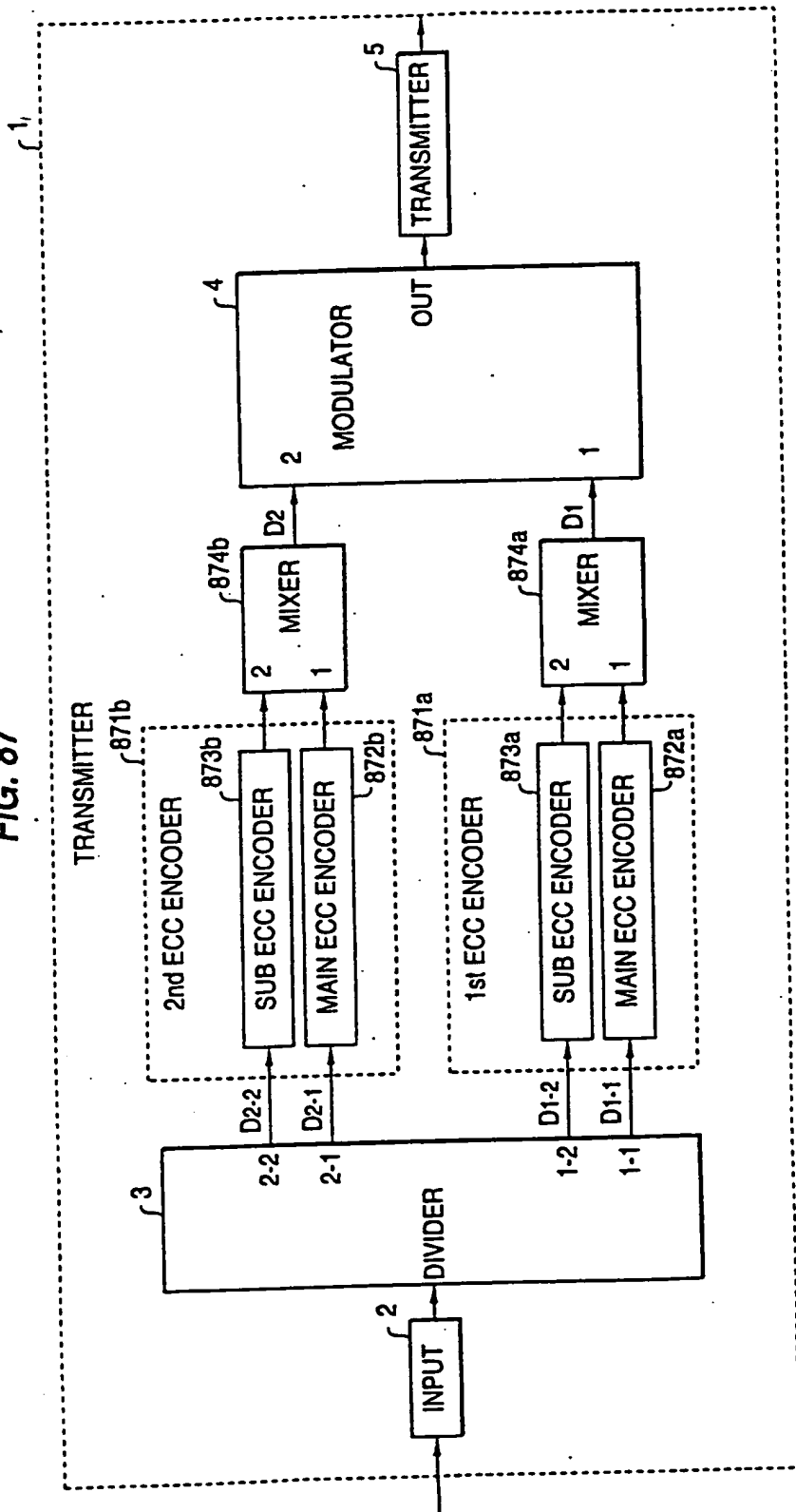




FIG. 88

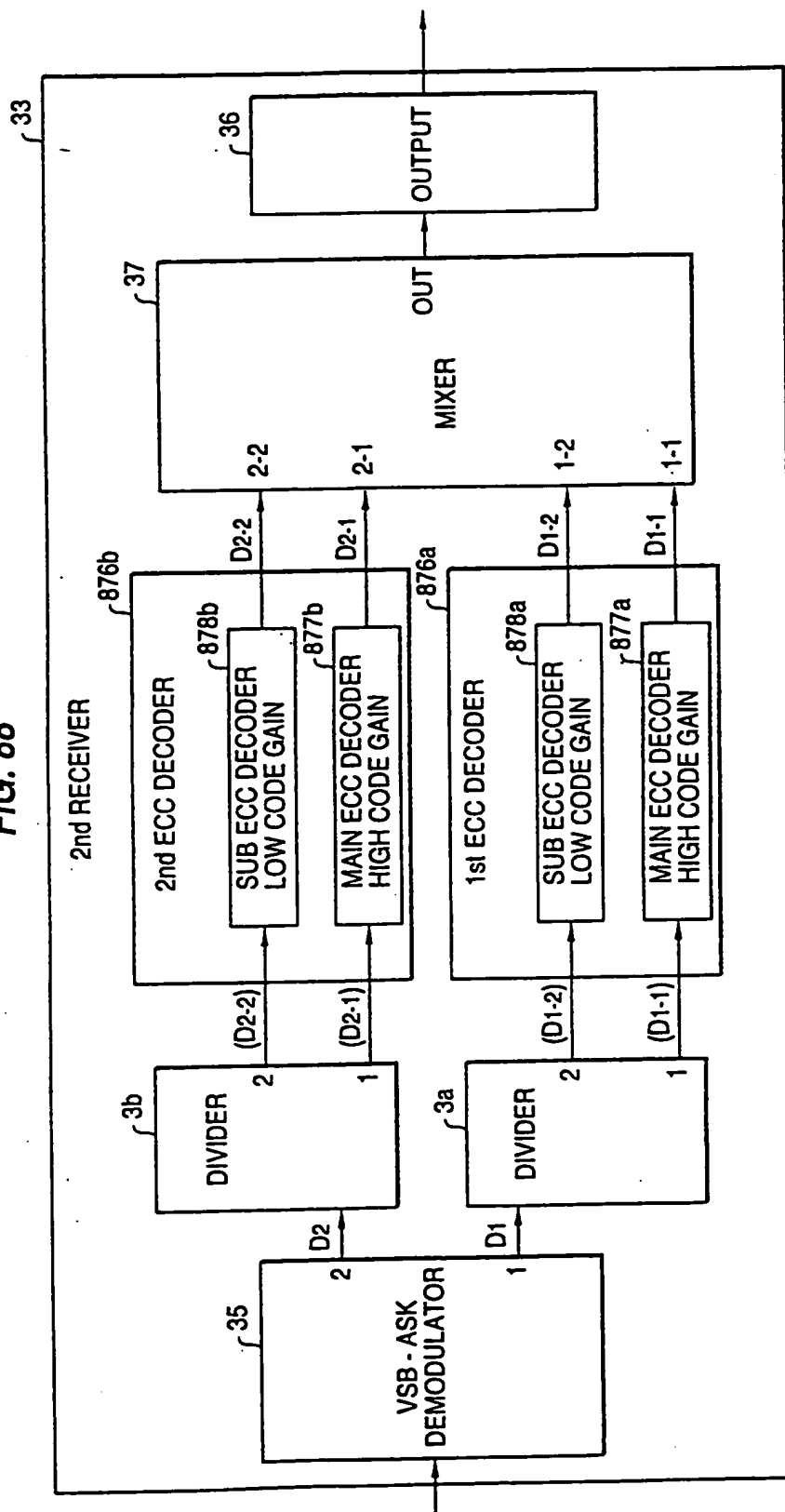




FIG. 89

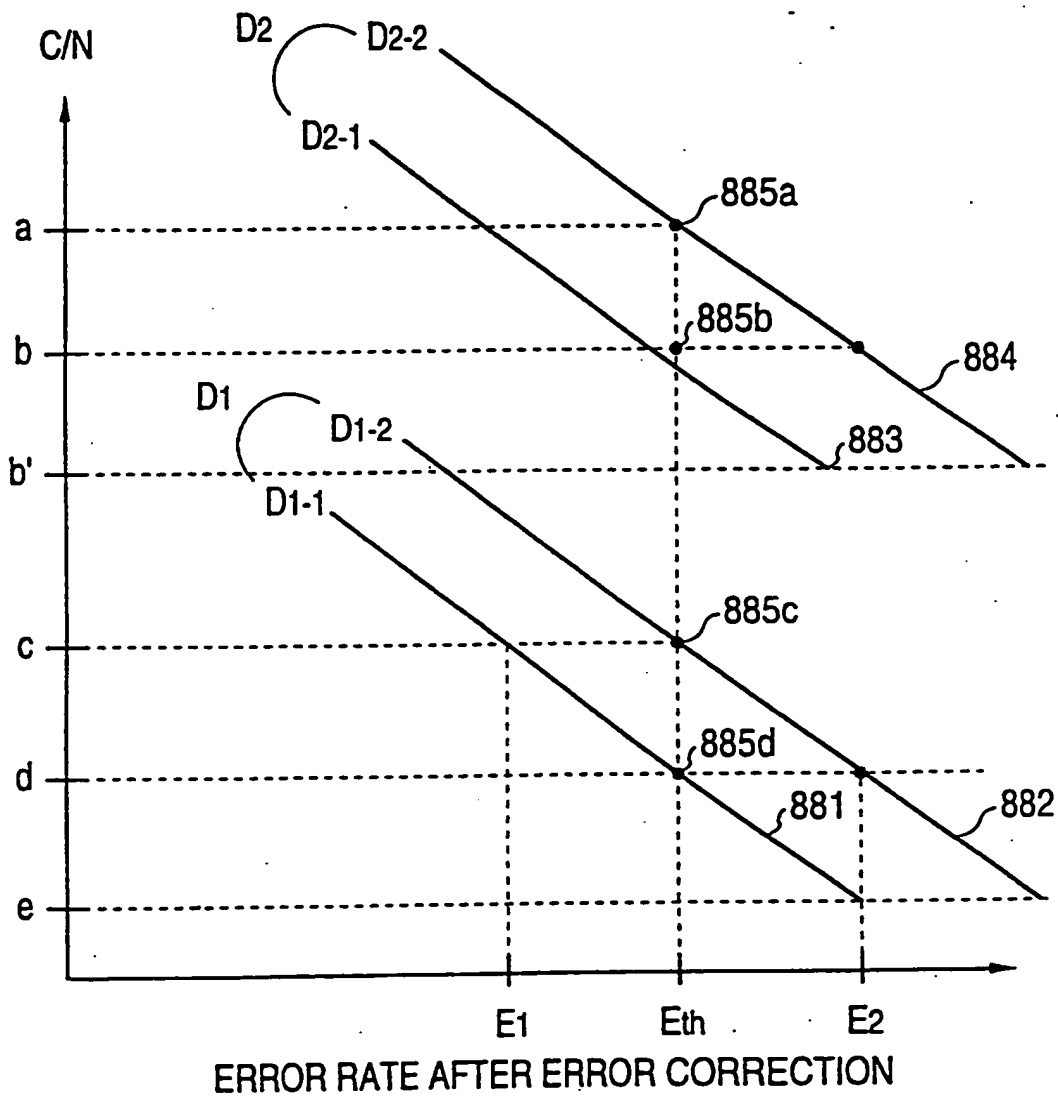






FIG. 90

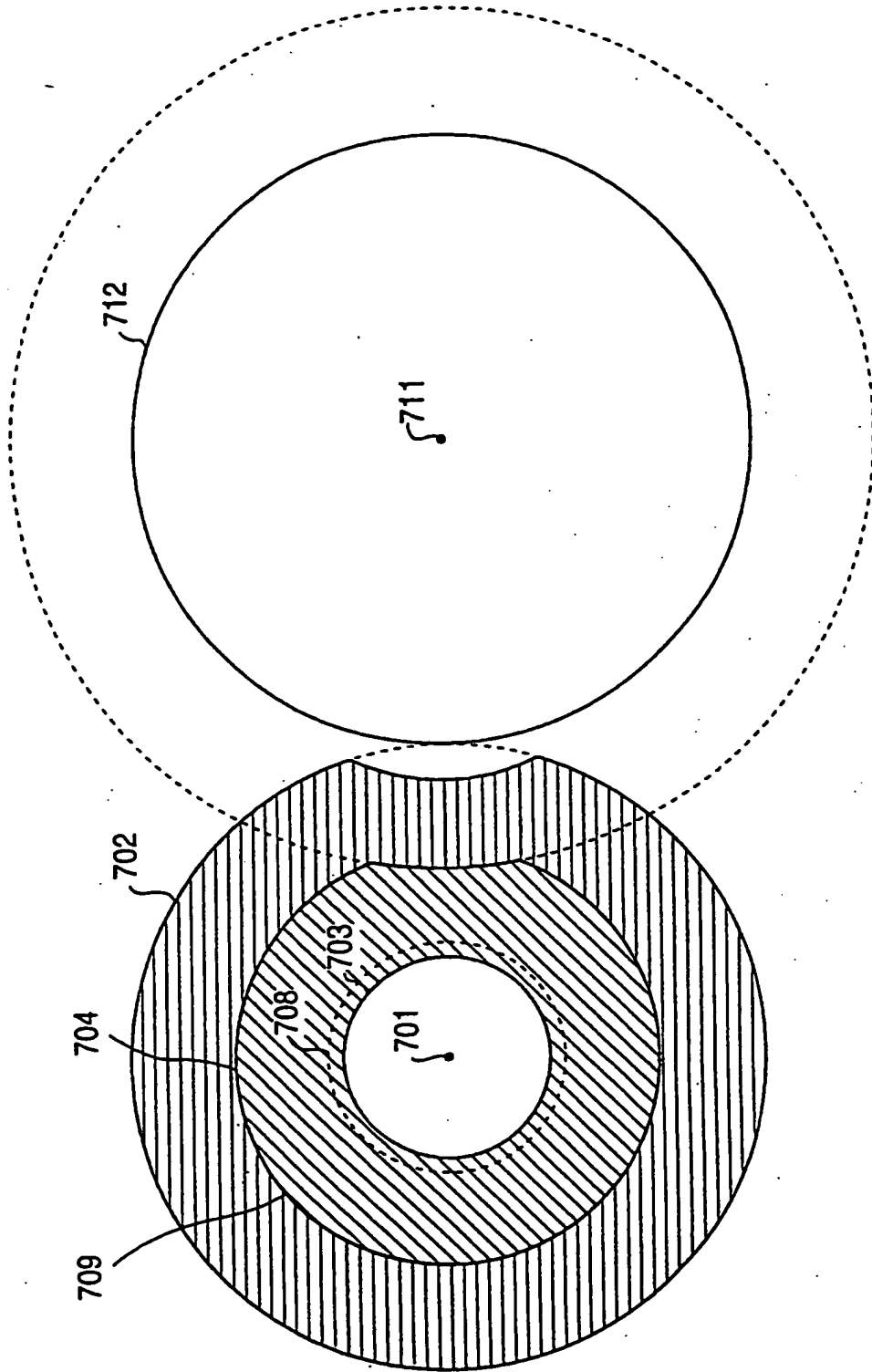




FIG. 91

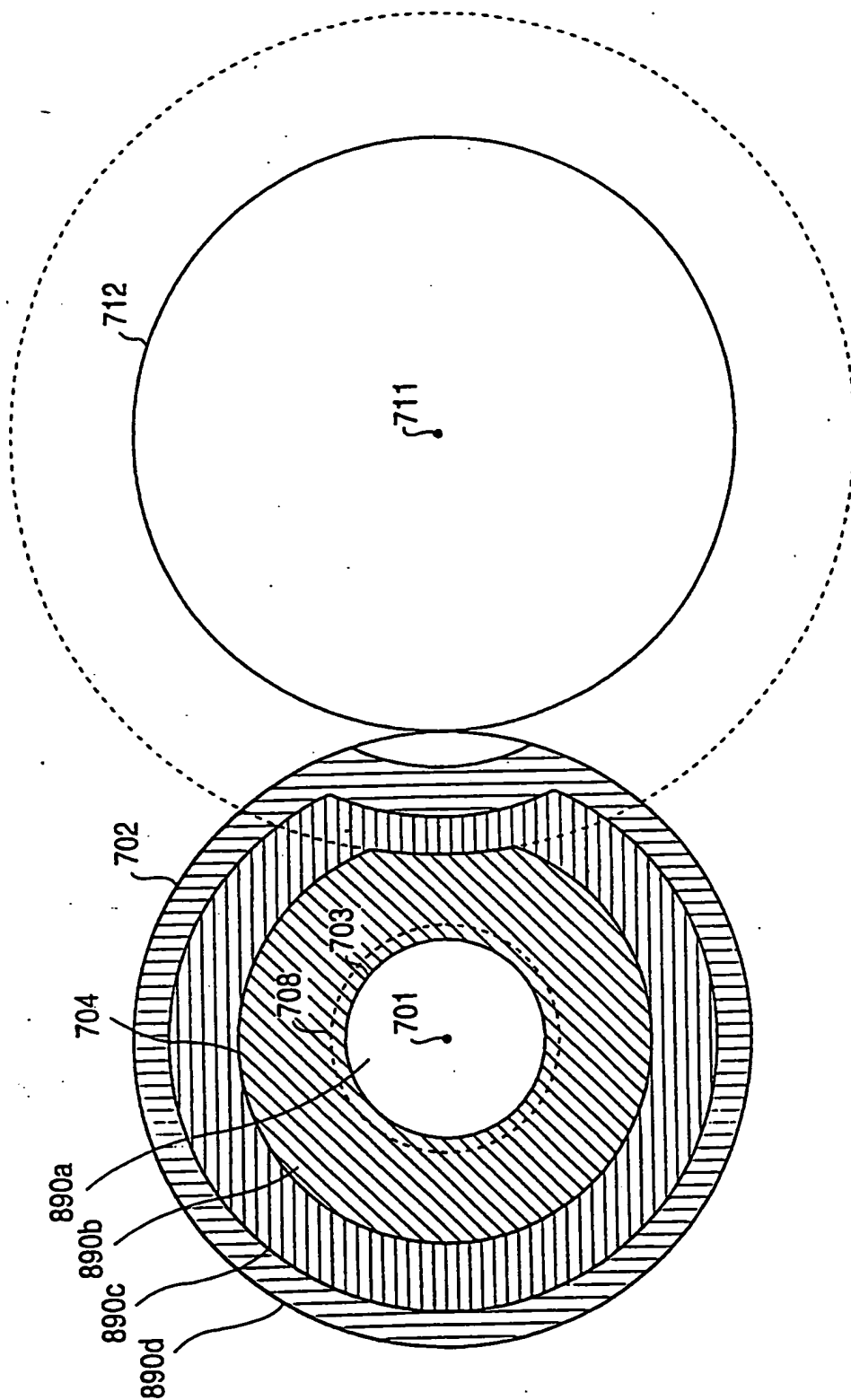


FIG. 92

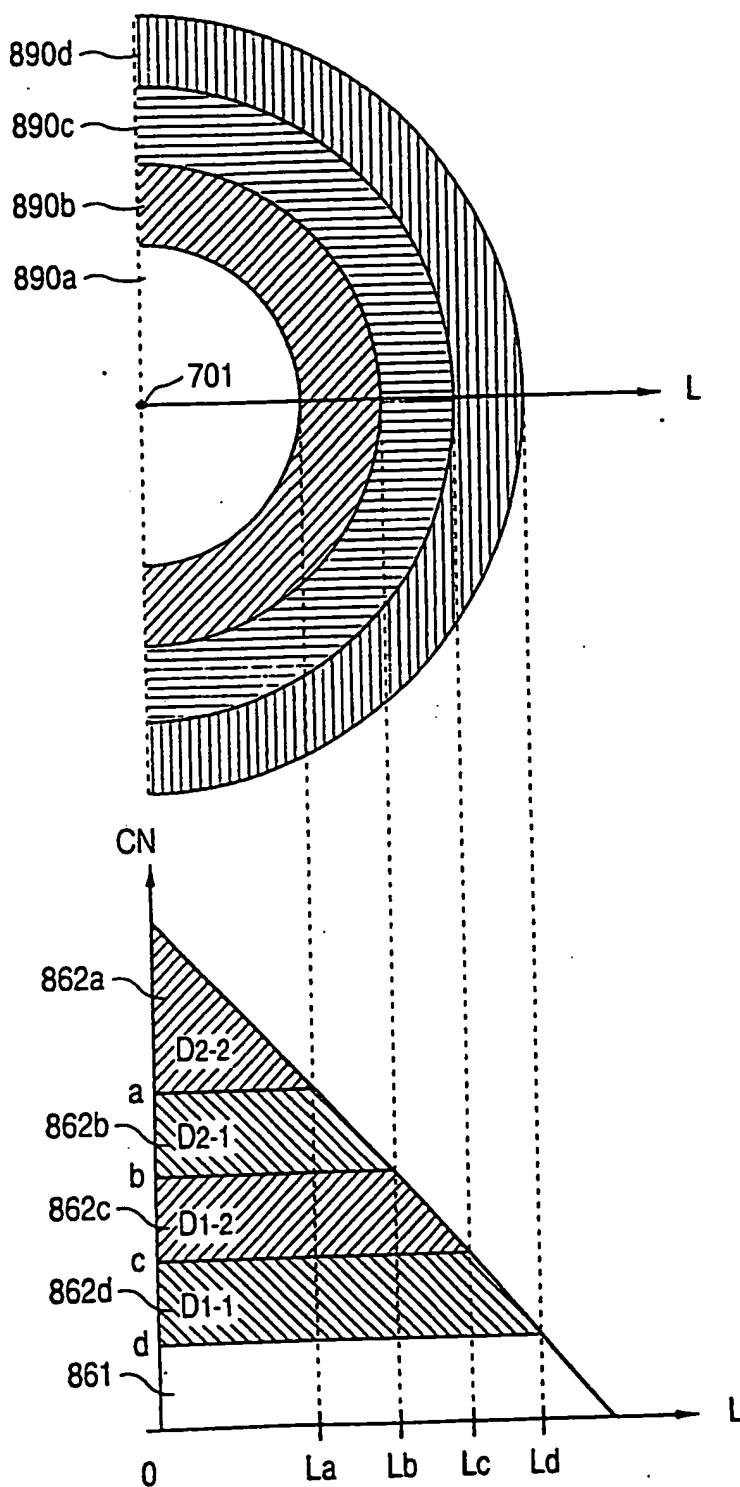




FIG. 93

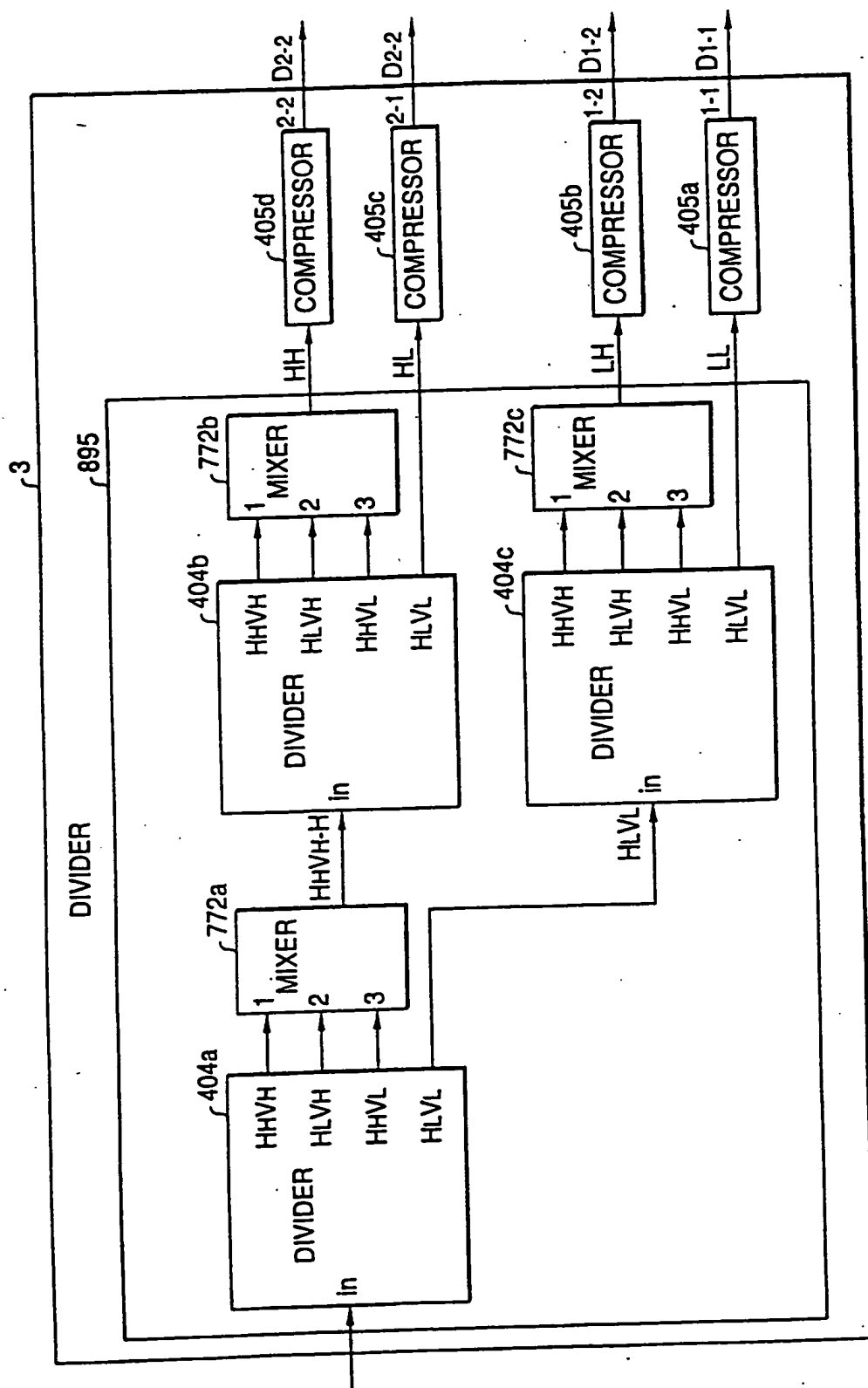




FIG. 94

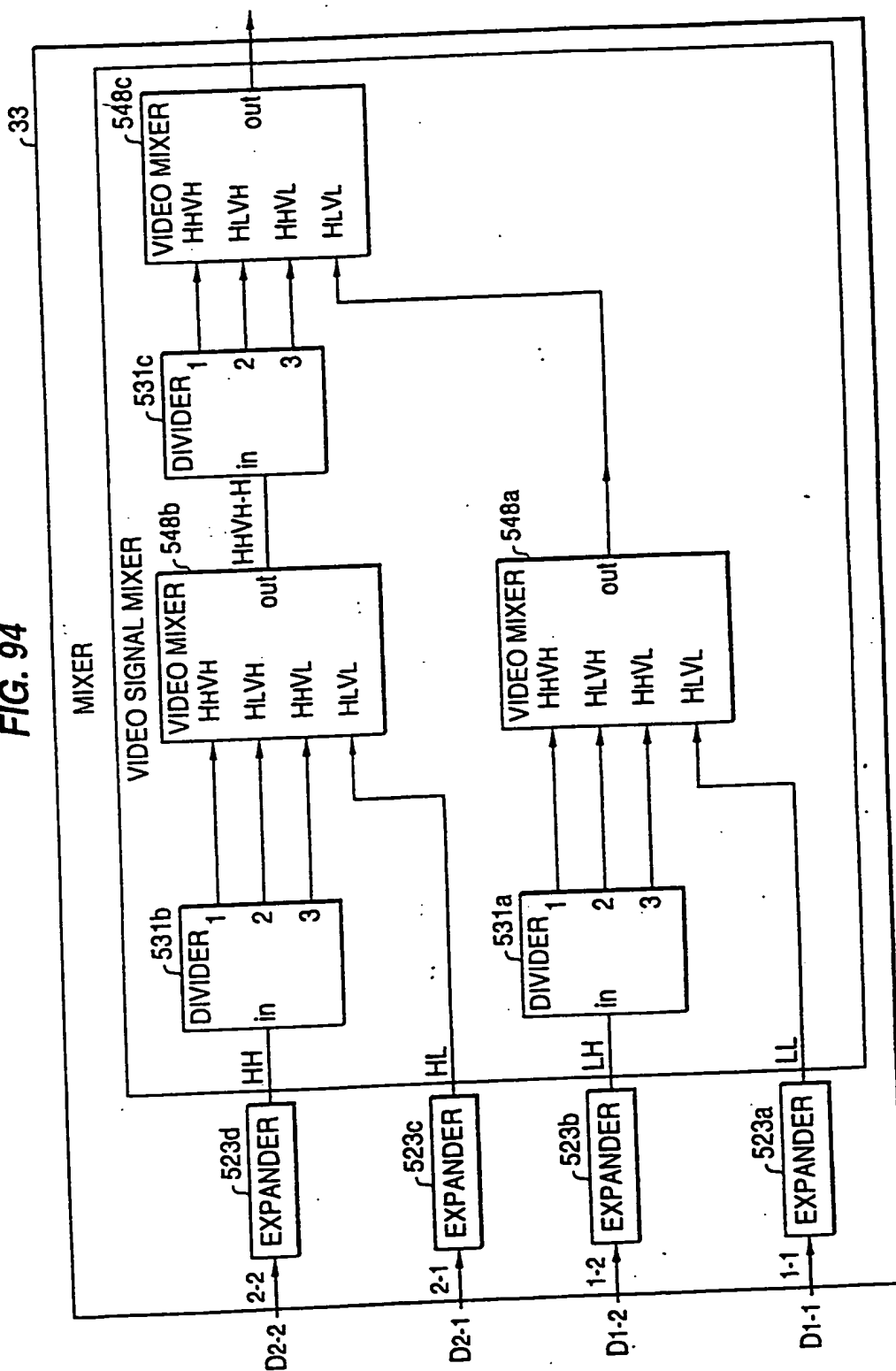
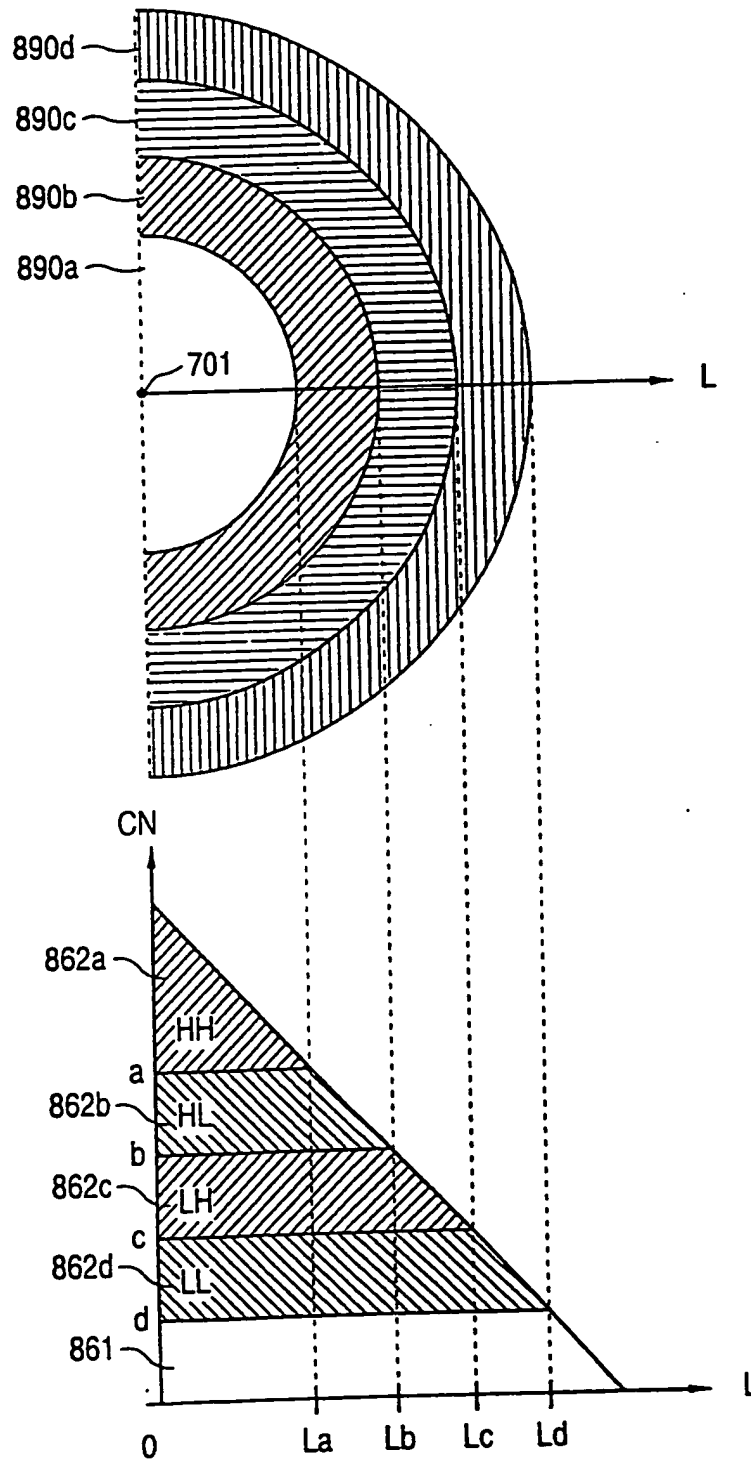




FIG. 95



O I P E J C 8 7  
O C T 2 4 2 0 0 2  
P A T E N T & T R A D E M A R K O F F I C E

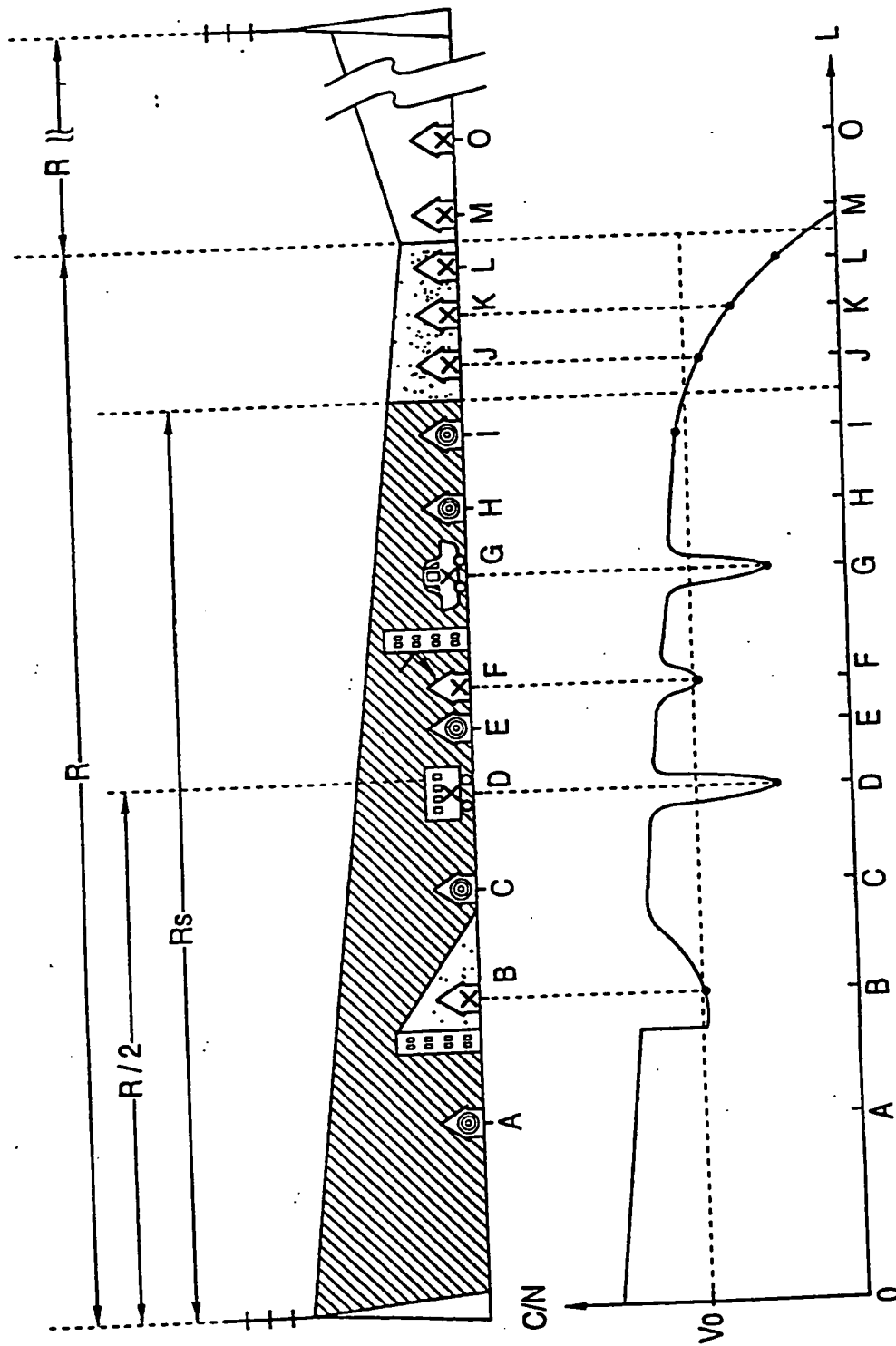
U.S. Patent

Feb. 4, 1997

Sheet 95 of 178

5,600,672

FIG. 96





U.S. Patent

Feb. 4, 1997

Sheet 96 of 178

5,600,672

FIG. 97

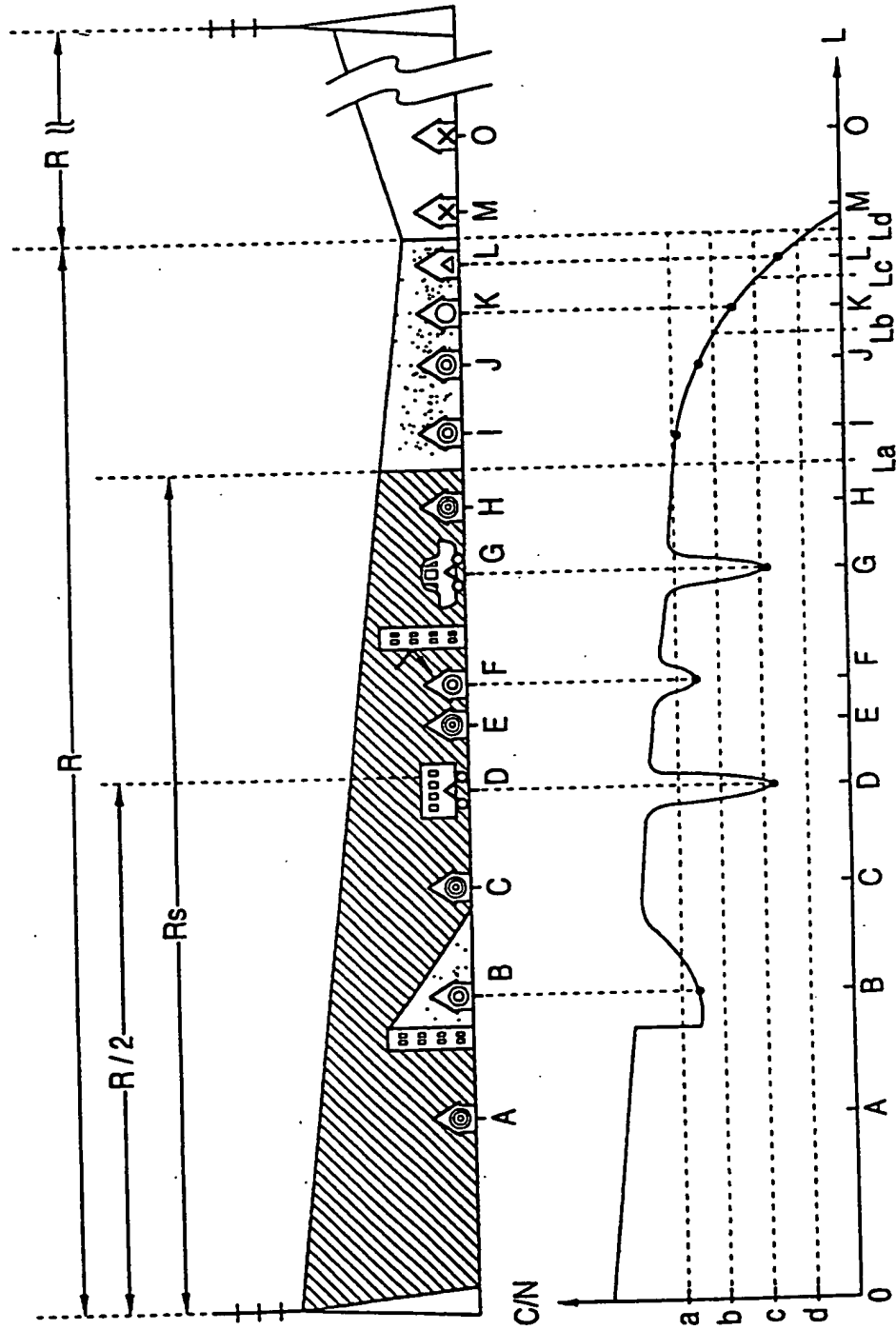






FIG. 98

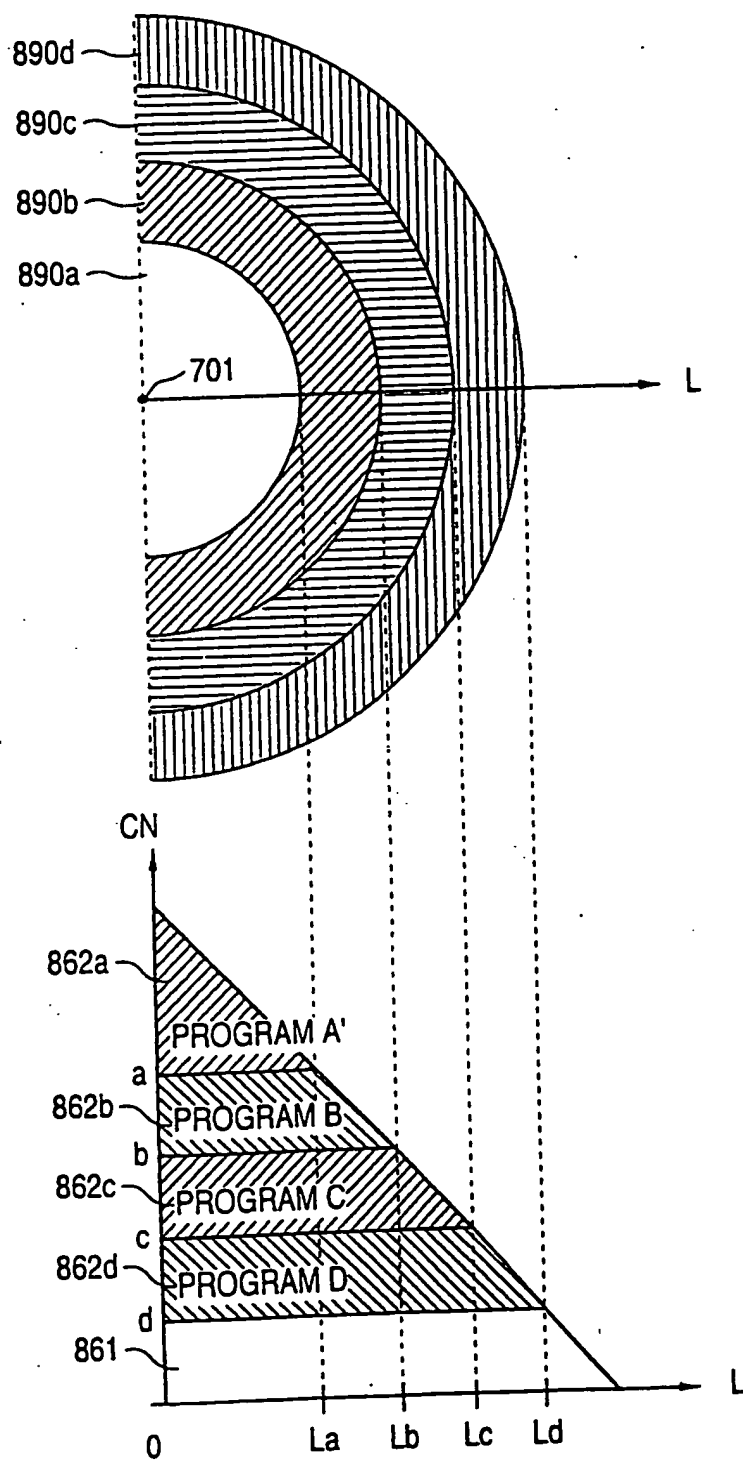




FIG. 99

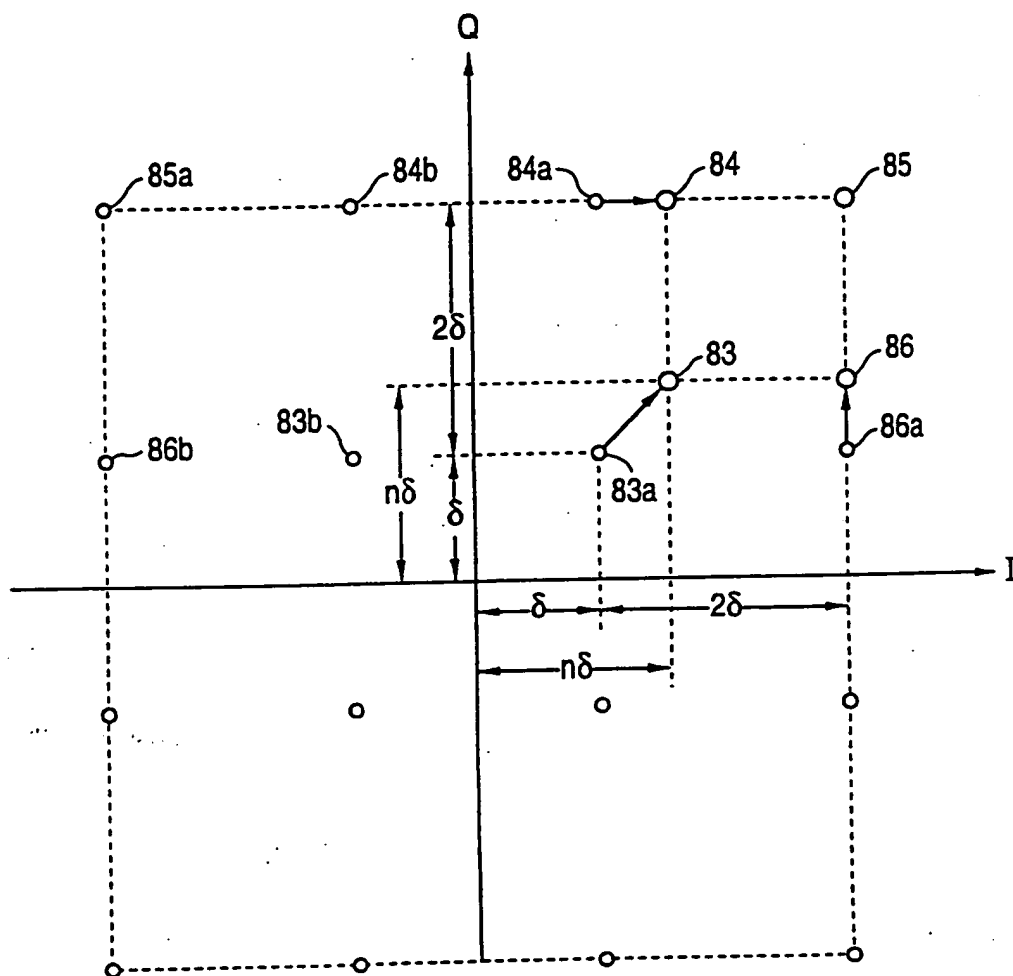




FIG. 100

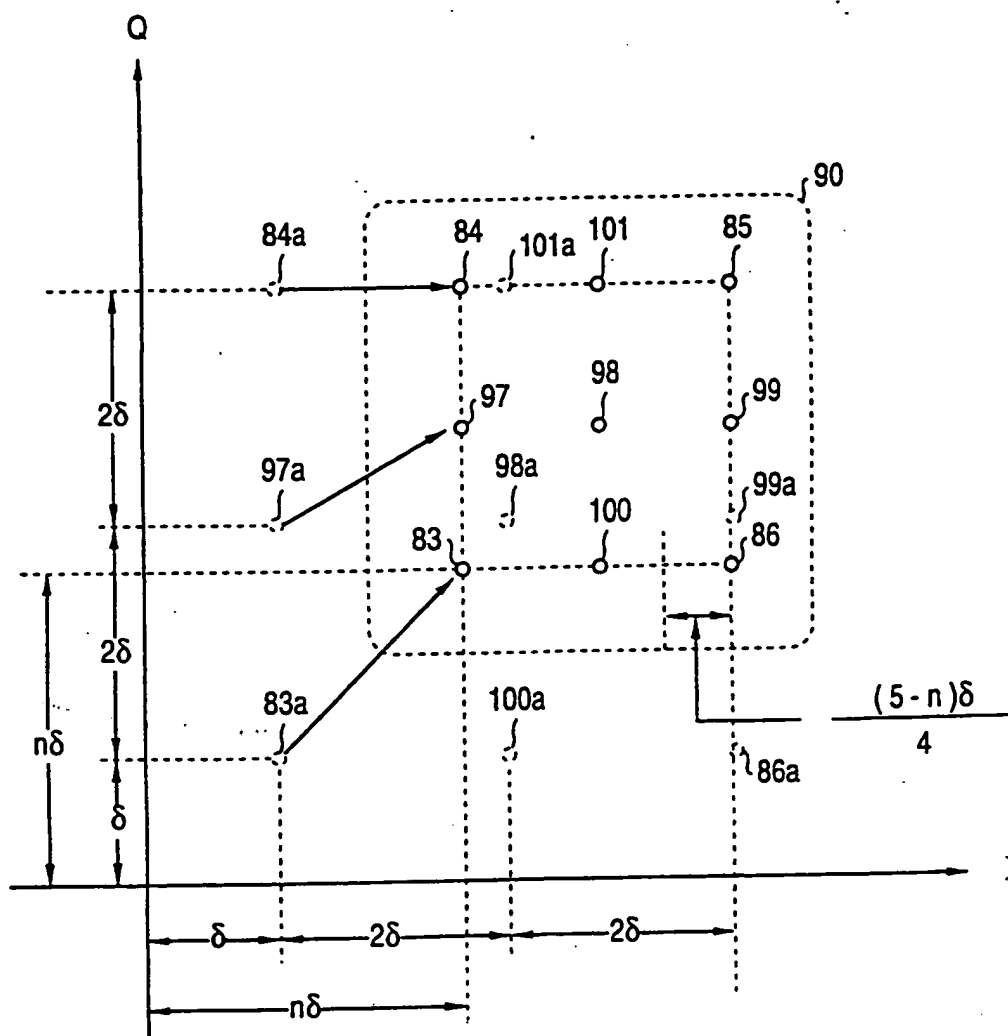




FIG. 101

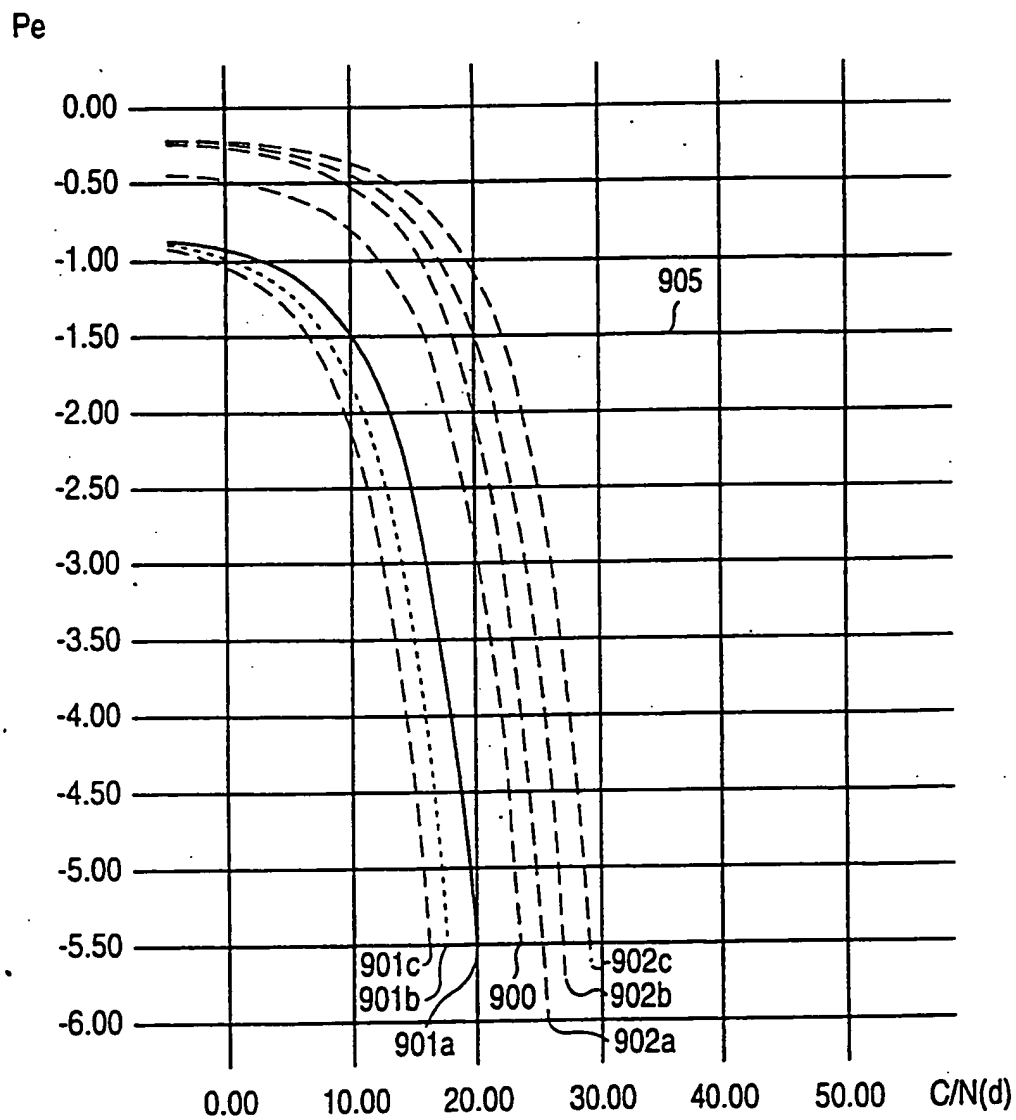




FIG. 102

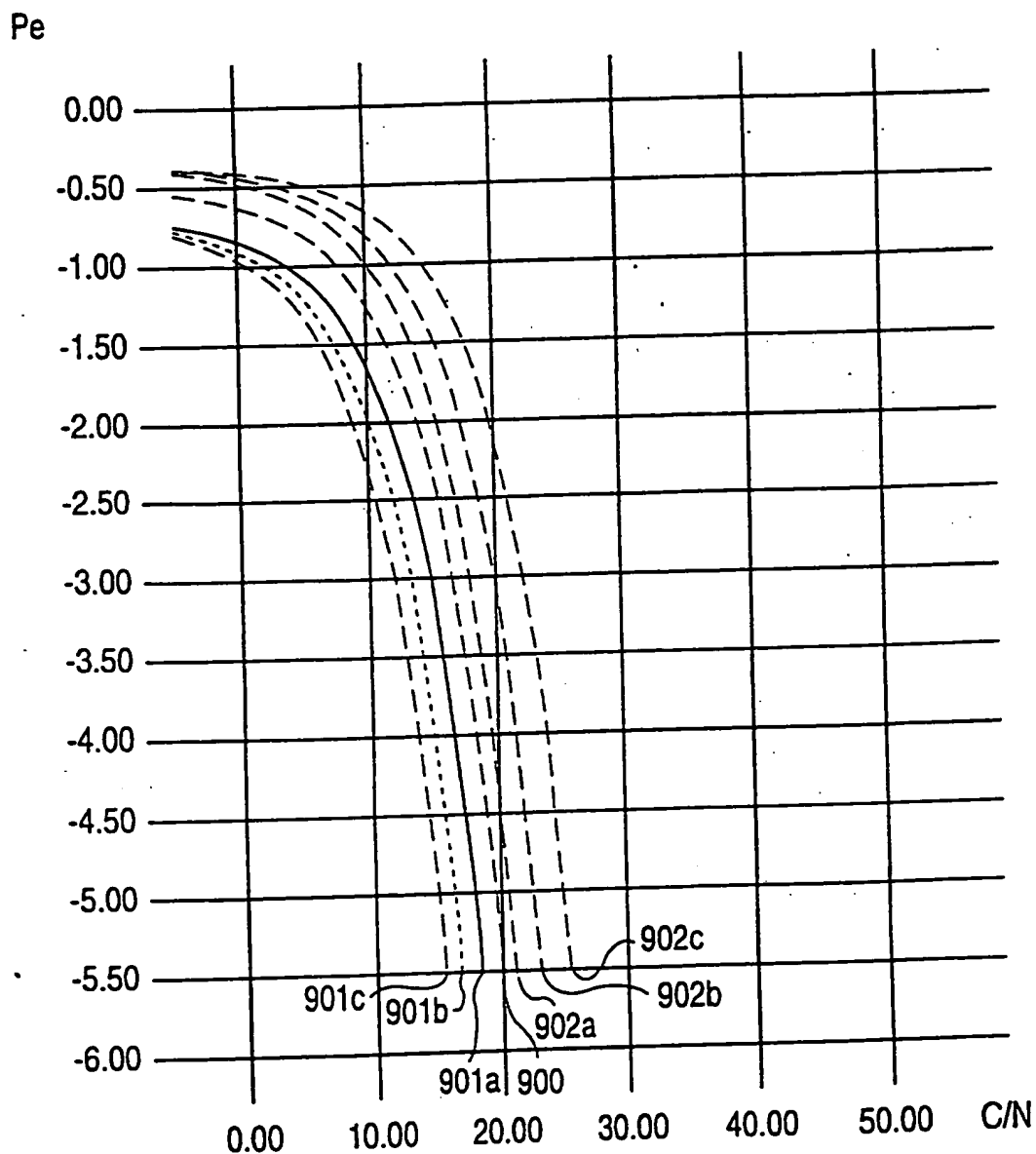




FIG. 103

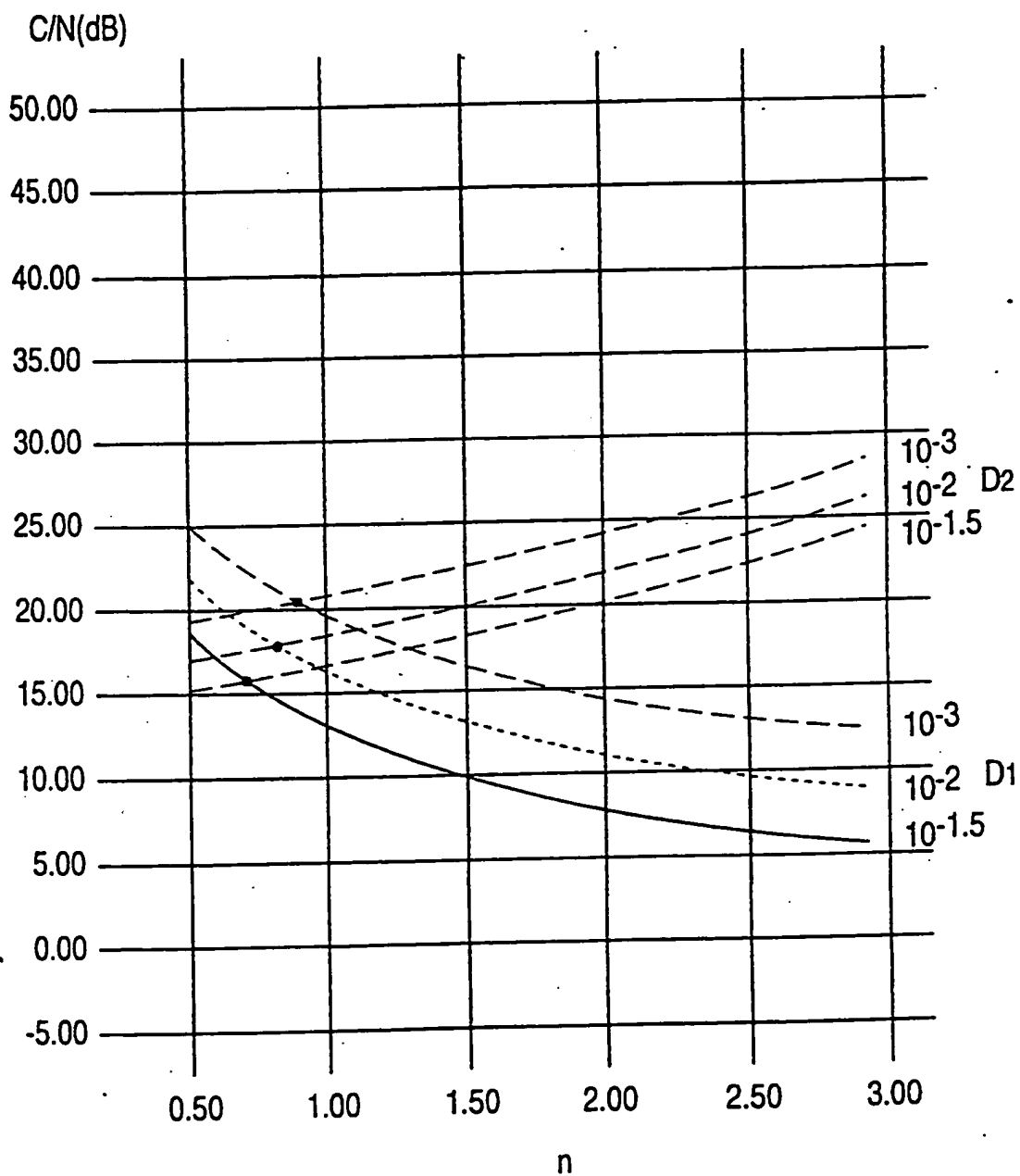




FIG. 104

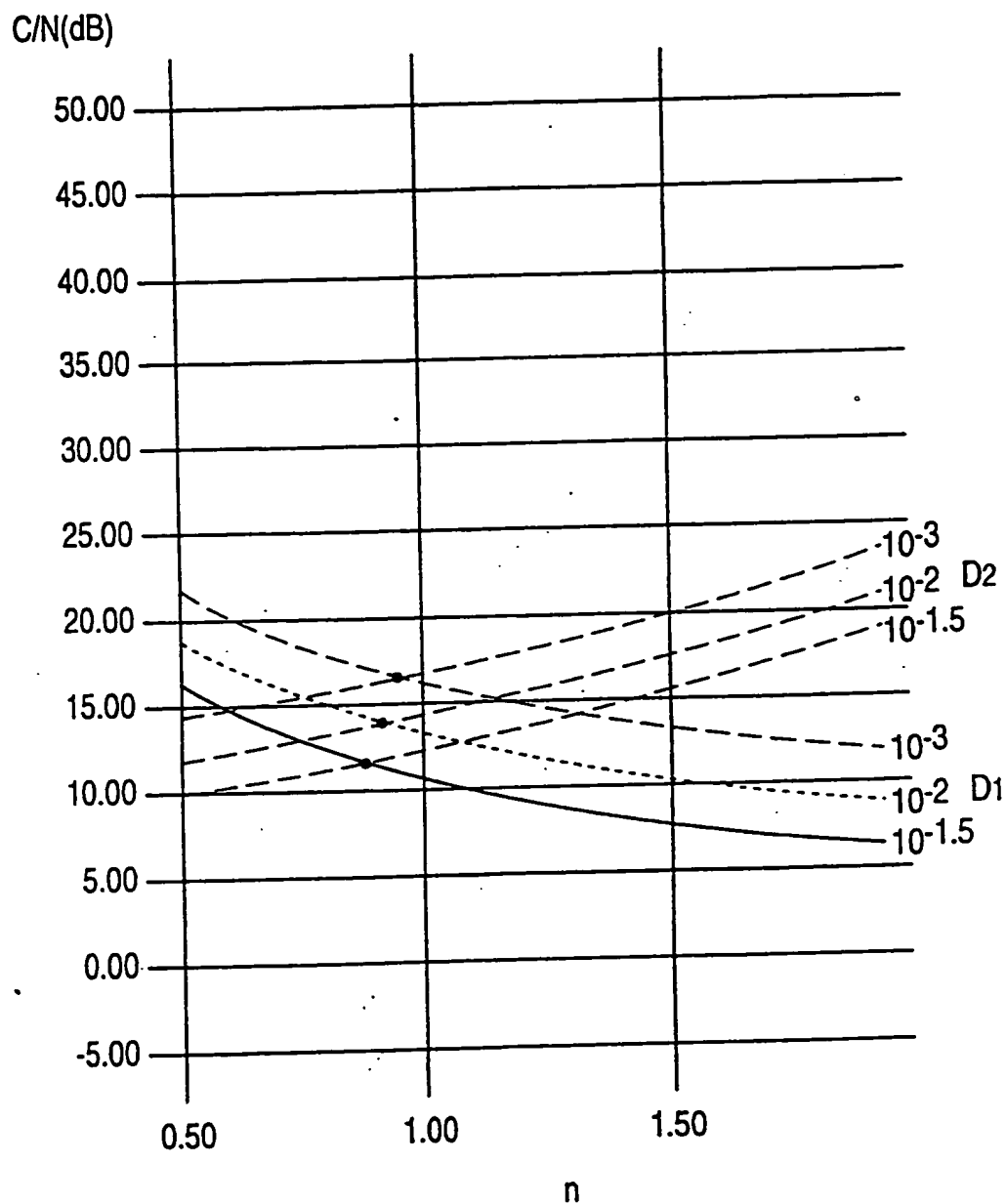
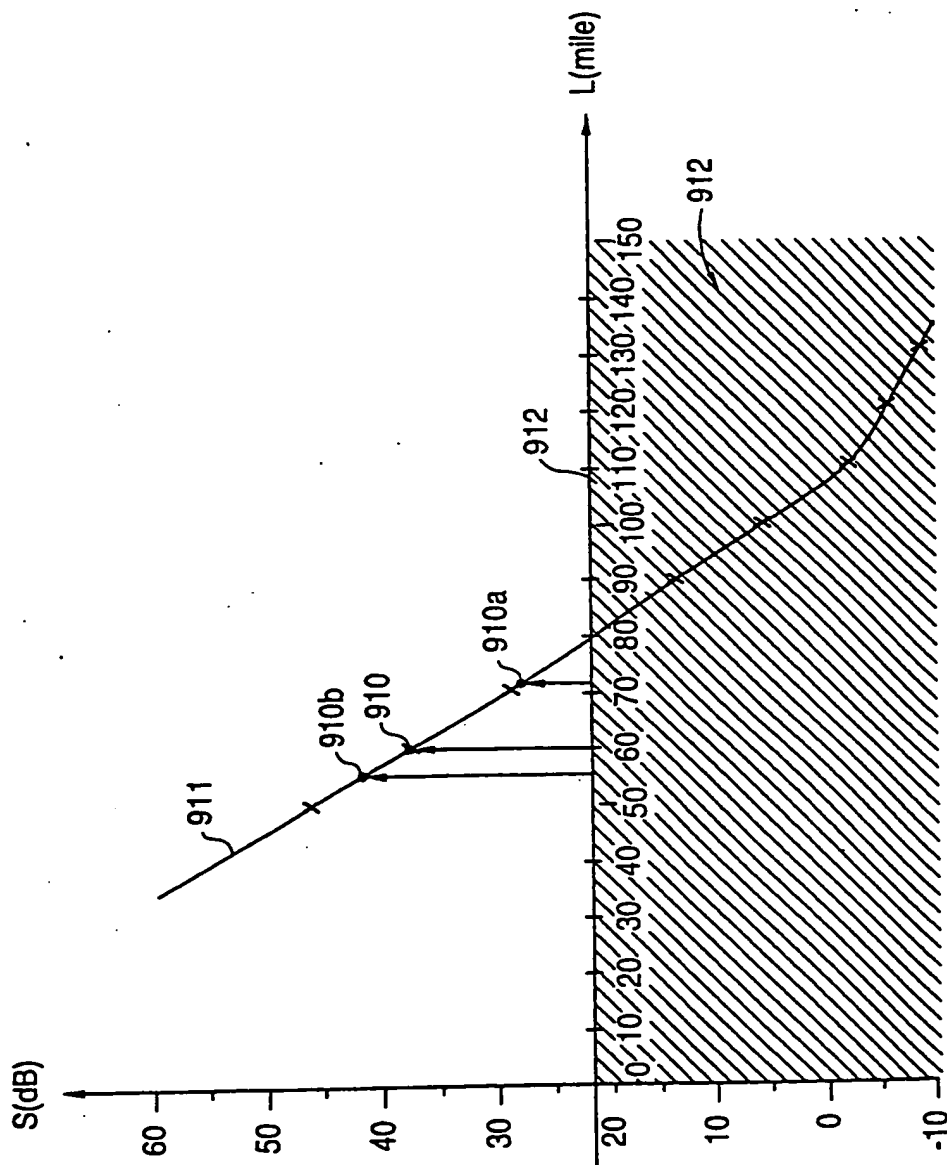




FIG. 105





O I P E  
OCT 24 2002  
FUELL & T...

FIG. 106

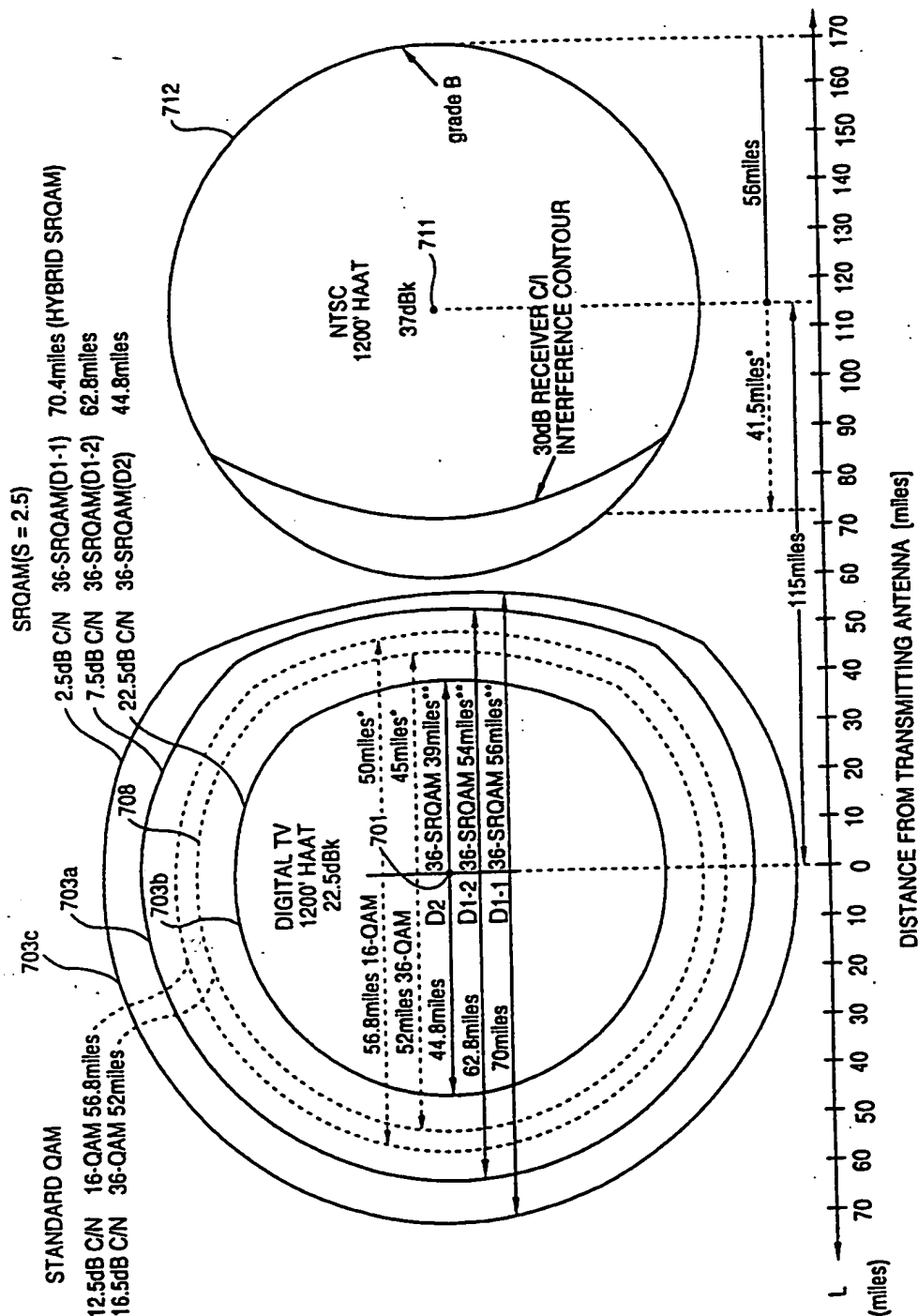


FIG. 107

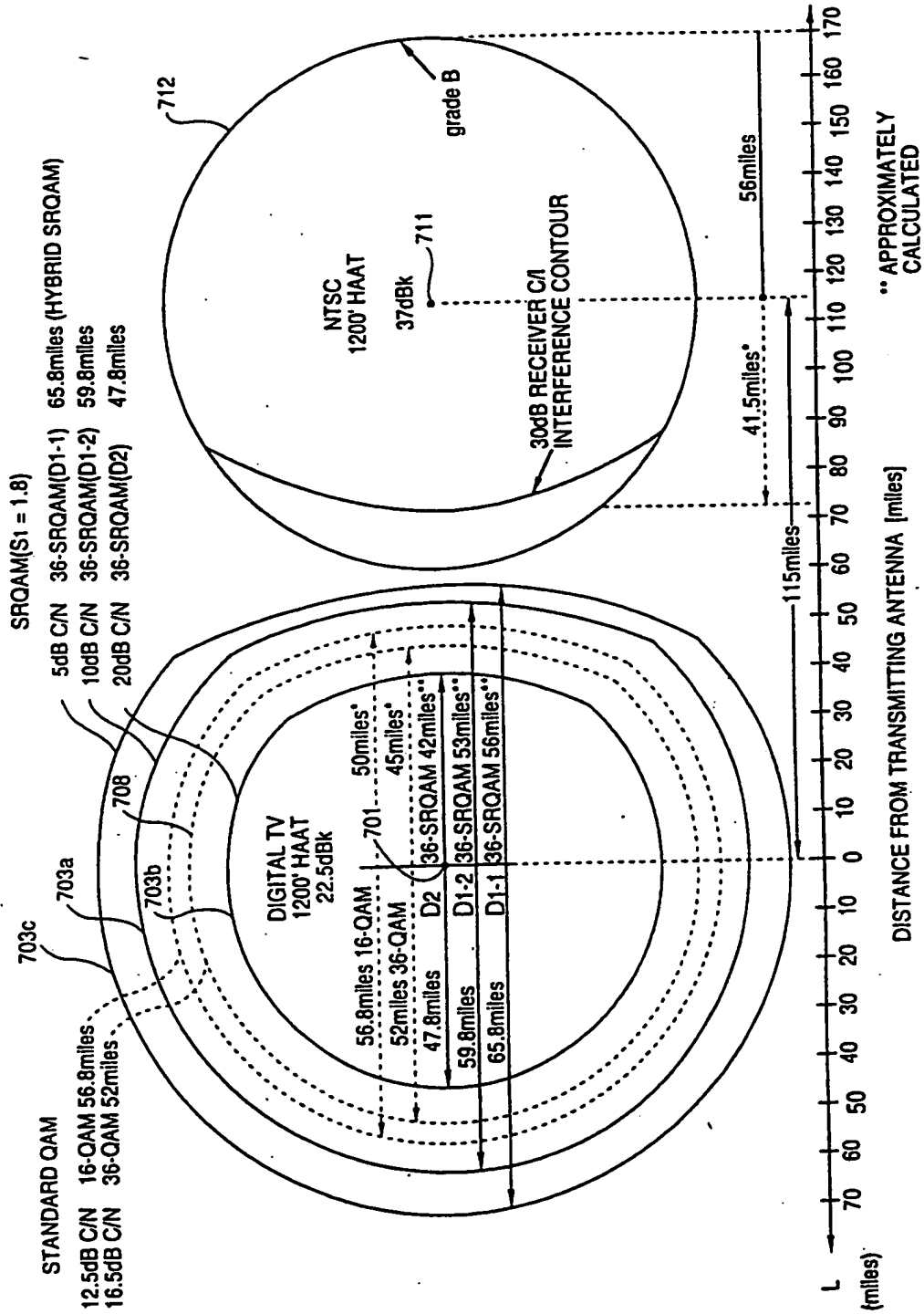




FIG. 108(a)

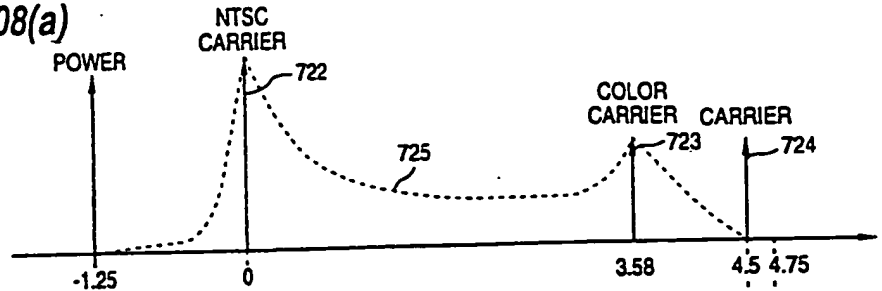


FIG. 108(b)

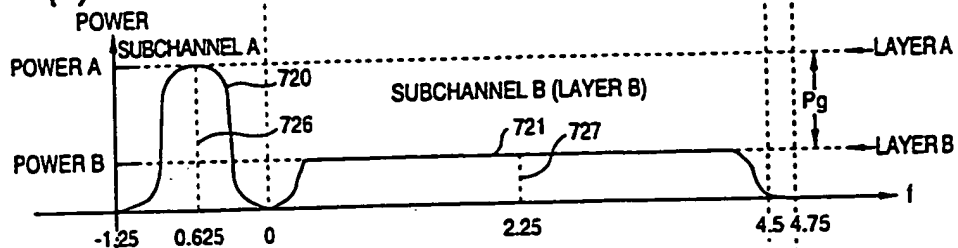


FIG. 108(c)

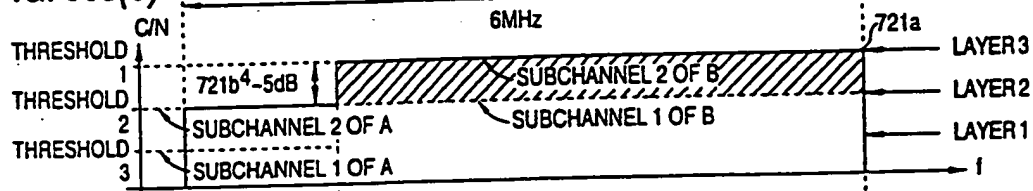


FIG. 108(d)

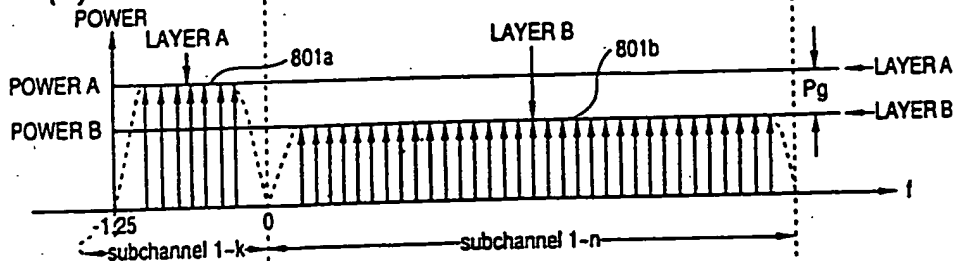
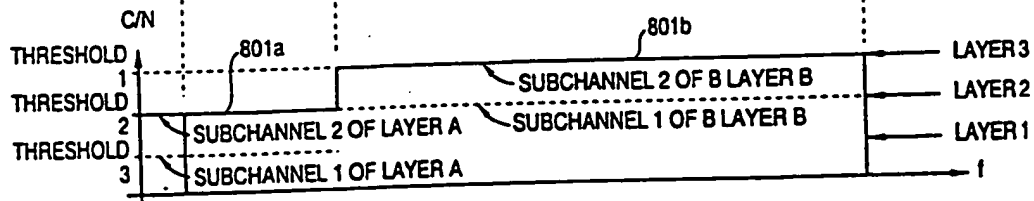


FIG. 108(e)



O I P E J C B  
OCT 24 2002  
PATENT & TRADEMARK

U.S. Patent

Feb. 4, 1997

Sheet 108 of 178

5,600,672

FIG. 109

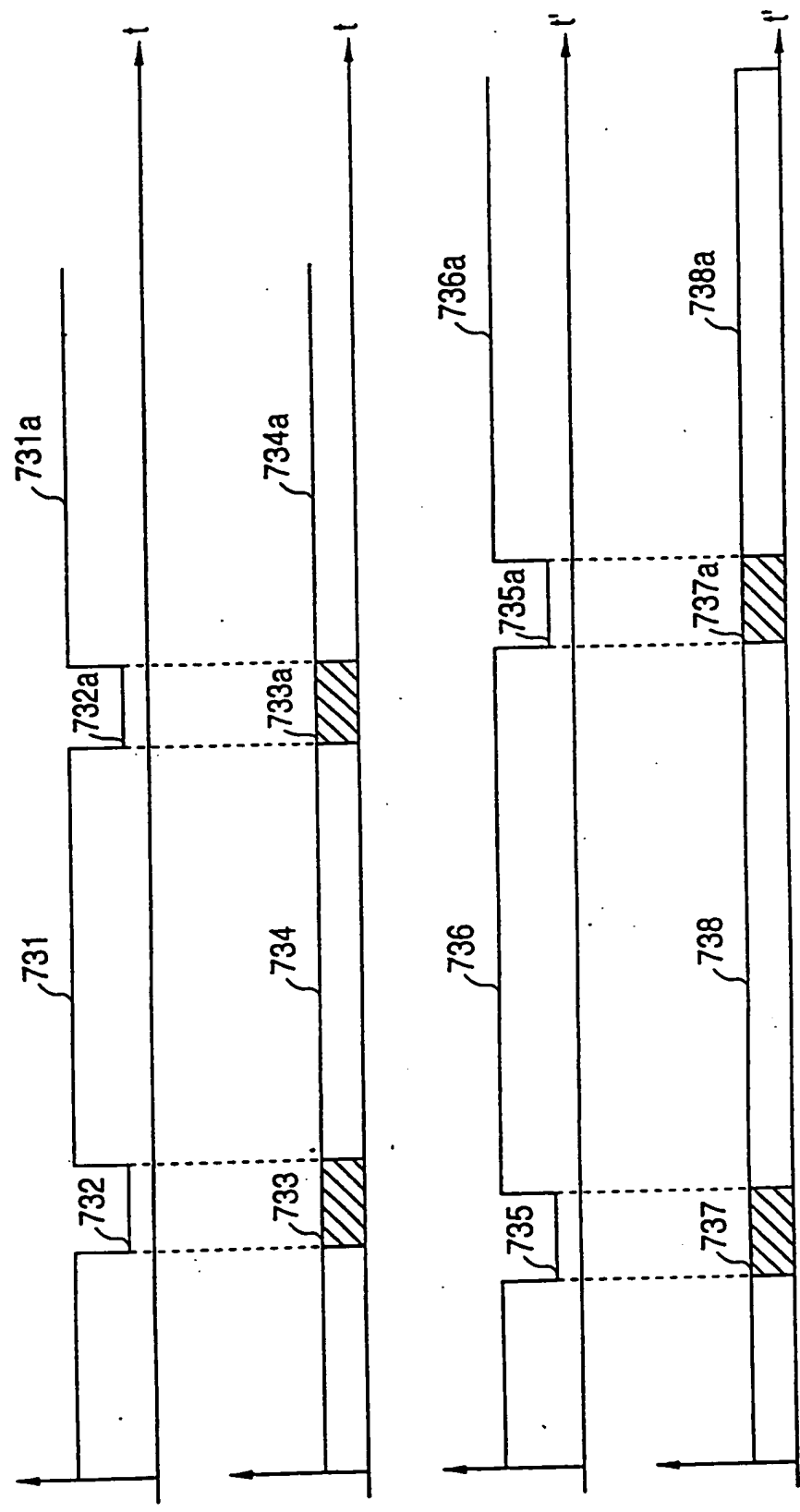
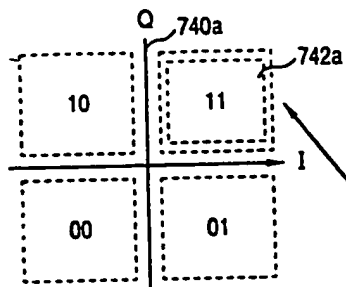






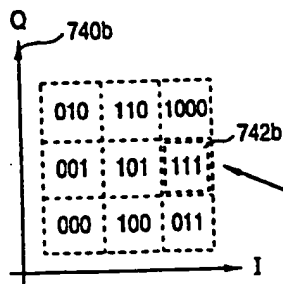
FIG. 111

SUBCHANNEL-1 (SRQAM:D1 = 2bit)



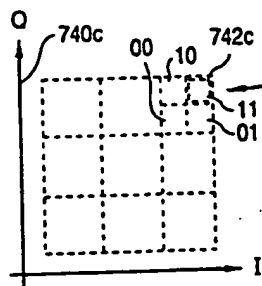
CODE WORD-1

SUBCHANNEL-2 (36-SRQAM:D2 = 3bit + 1/8bit)



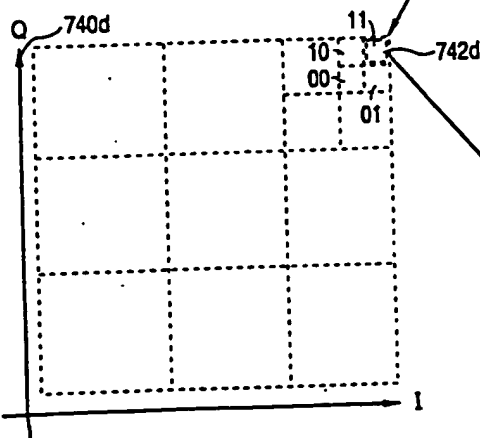
CODE WORD-2

SUBCHANNEL-3 (144-SRQAM:D3 = 2bit)



CODE WORD-3

SUBCHANNEL-4 (576-SRQAM:D4 = 2bit)



CODE WORD-4

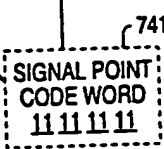
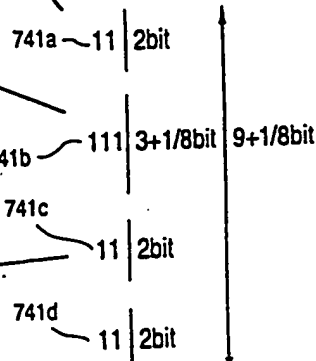
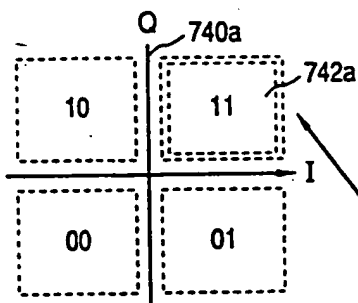


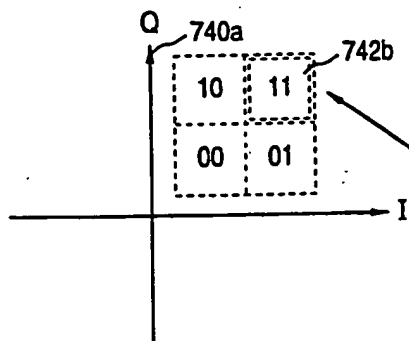


FIG. 112

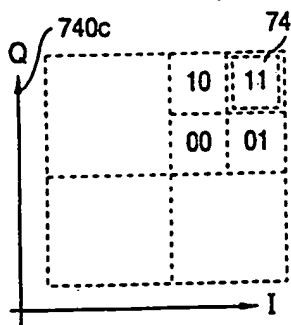
SUBCHANNEL-1 (SRQAM:D1 = 2bit)



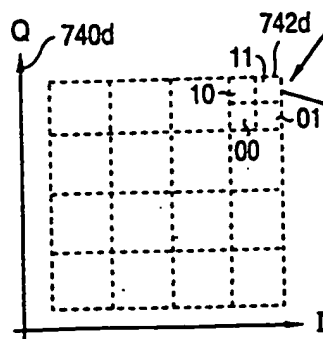
SUBCHANNEL-2 (16-SRQAM:D2 = 2bit)



SUBCHANNEL-3 (64-SRQAM:D3 = 2bit)



SUBCHANNEL-4 (256-SRQAM:D4 = 2bit)



CODE WORD-1

CODE WORD-2

CODE WORD-3

CODE WORD-4

741a ~ 11 2bit

741b 11 2bit

11 2bit

741c 11 2bit

11 2bit

741d 11 2bit

8bit

SIGNAL POINT  
CODE WORD  
11 11 11 11

741



FIG. 113

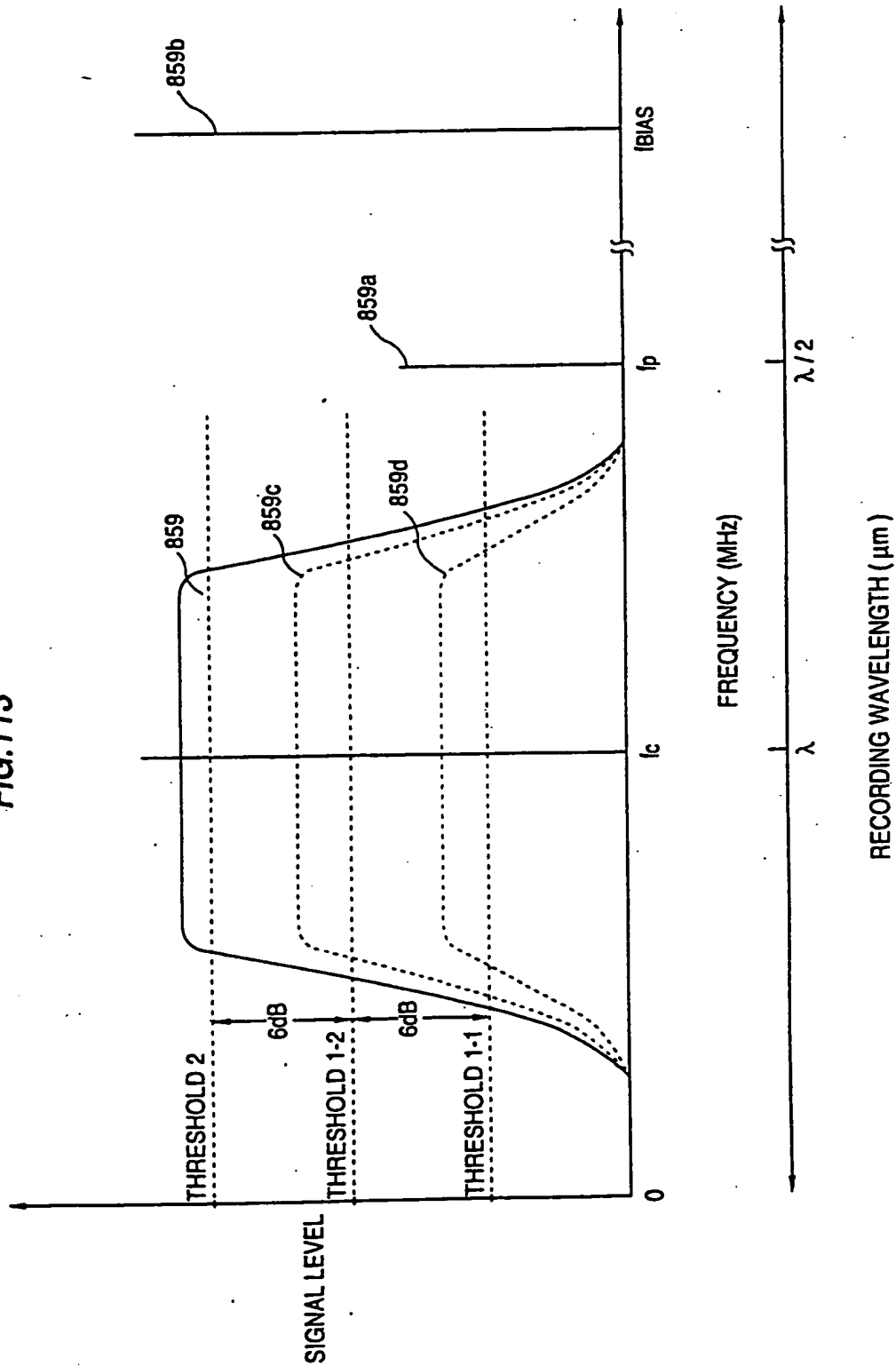






FIG. 114

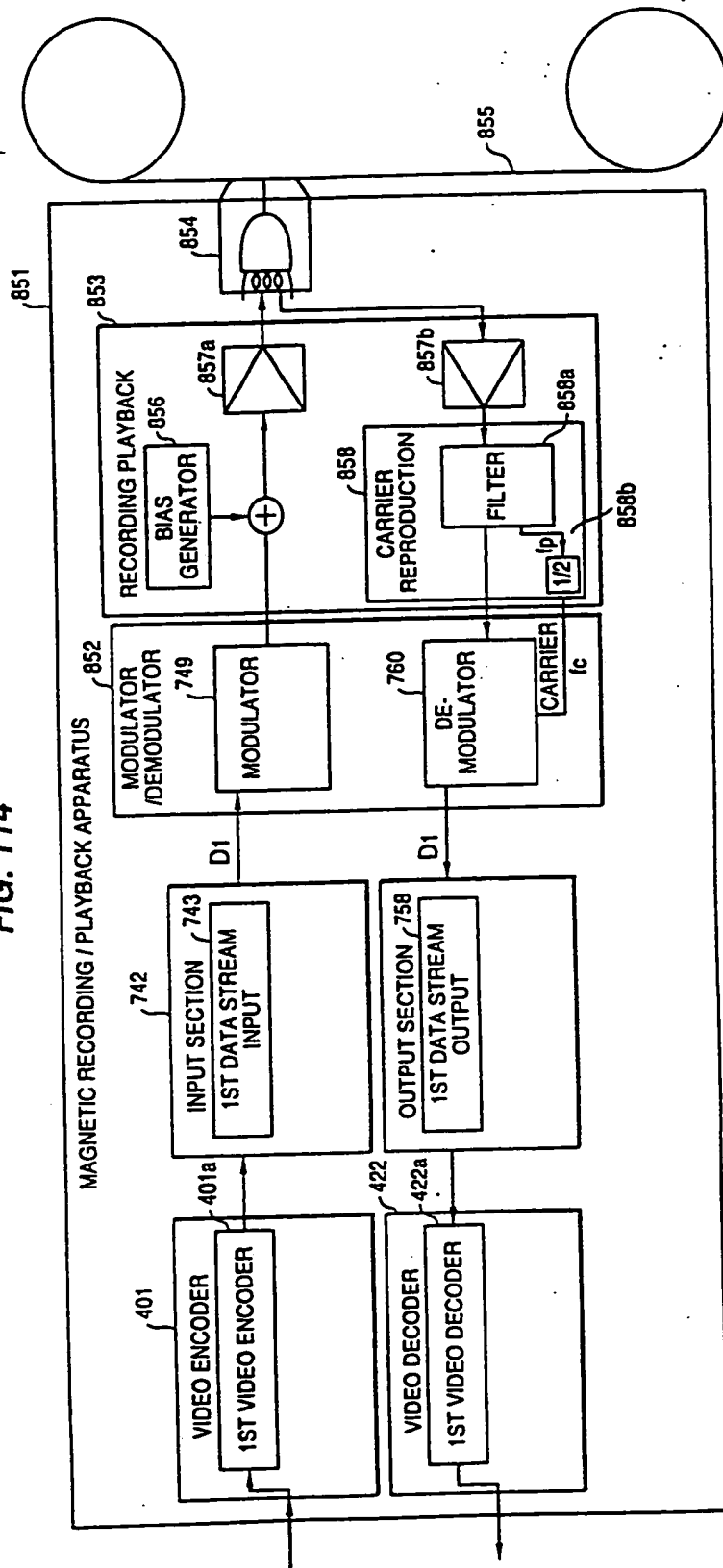
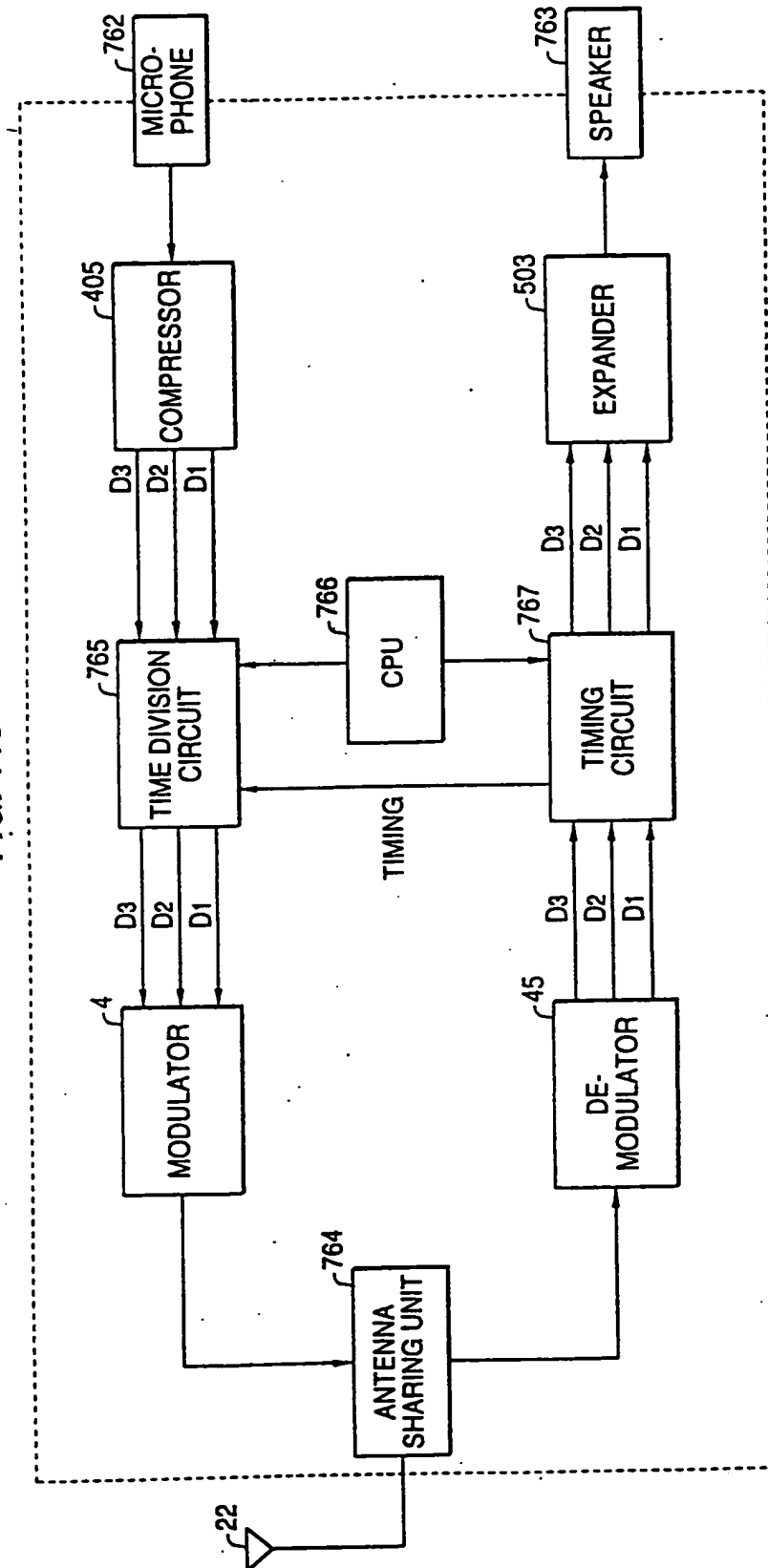




FIG. 115



O I P E J C  
OCT 24 2002  
PATENT & TRADEMARK

FIG. 116

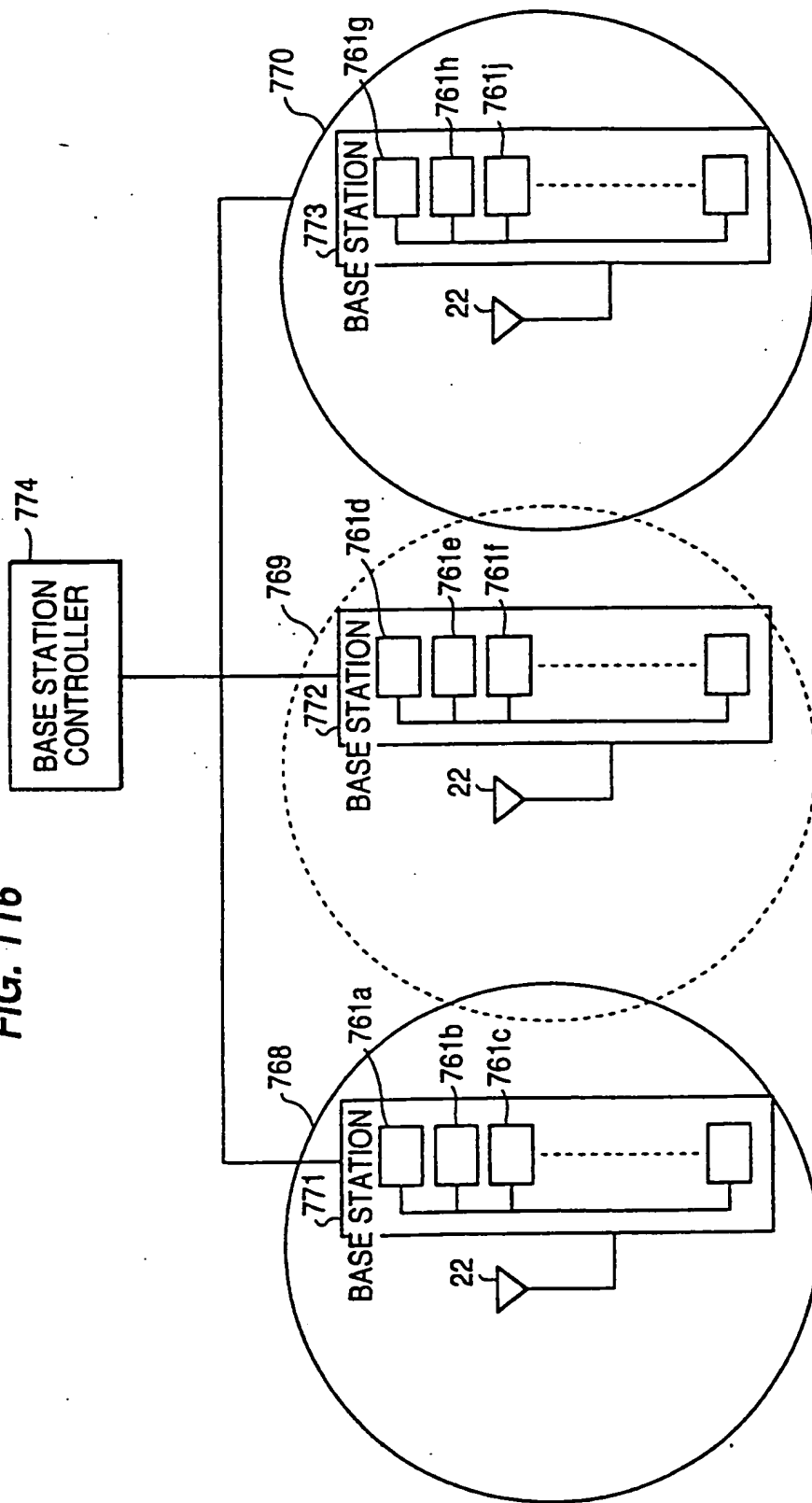




FIG. 117

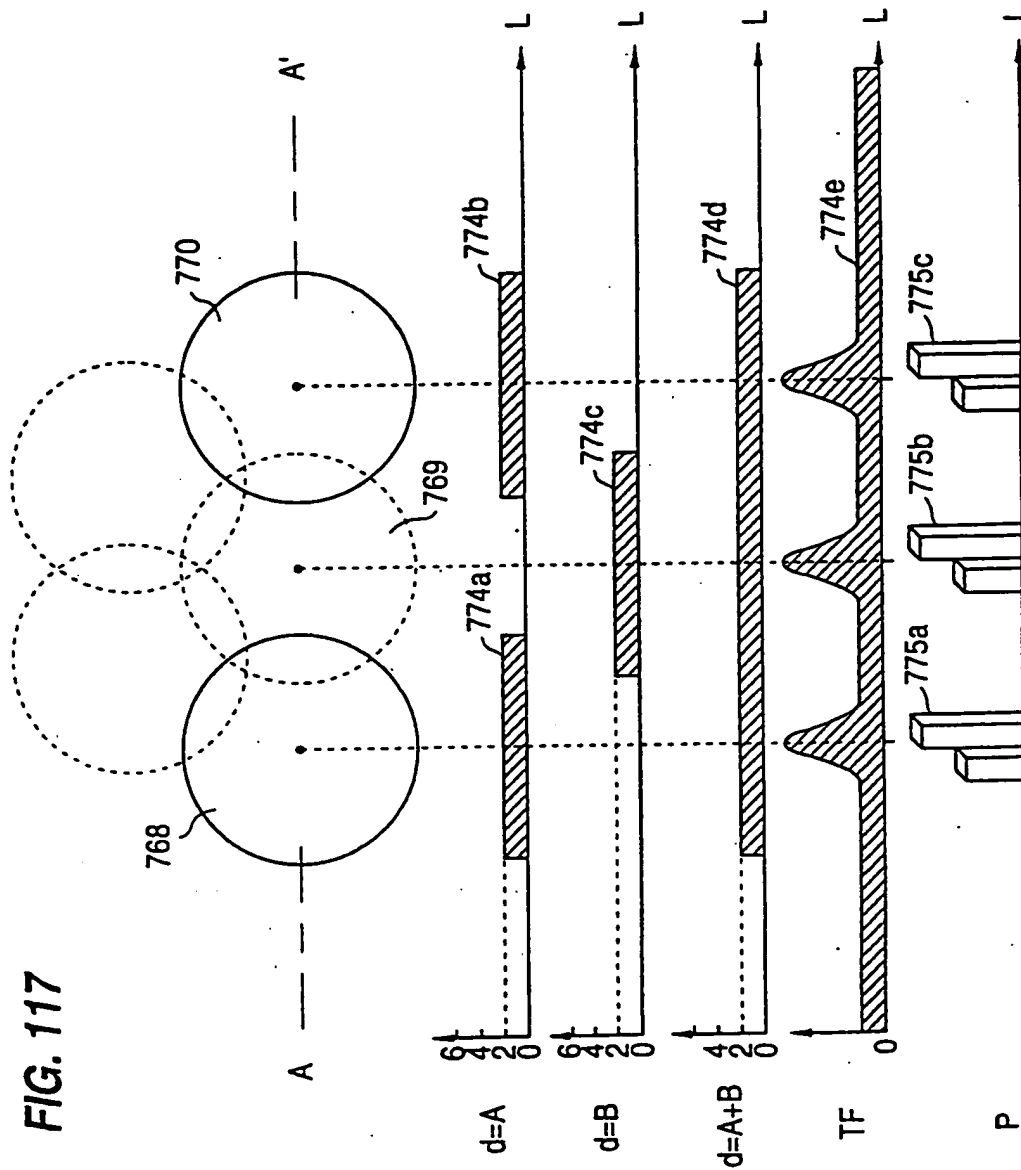




FIG. 118

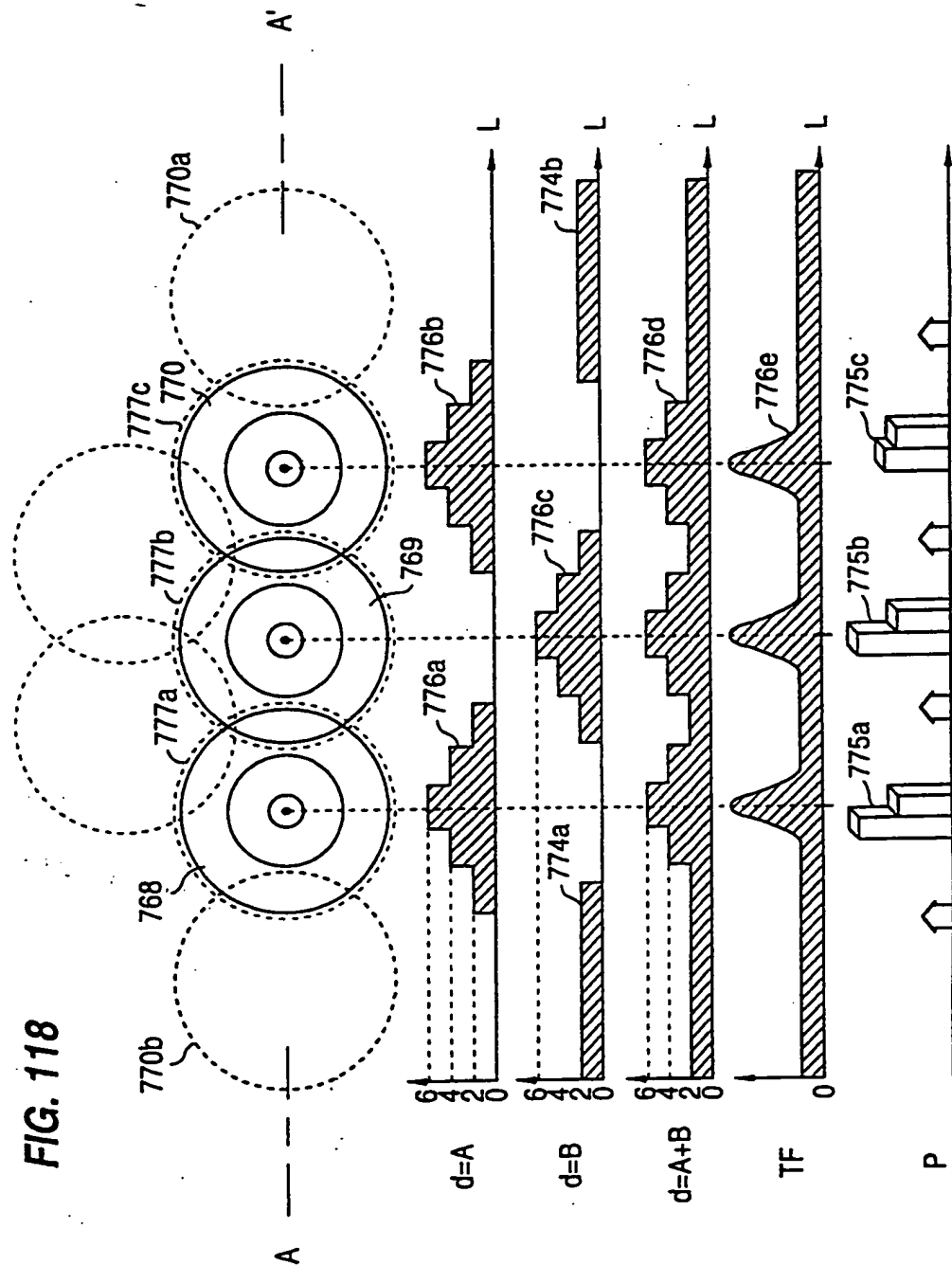




FIG. 119(a)

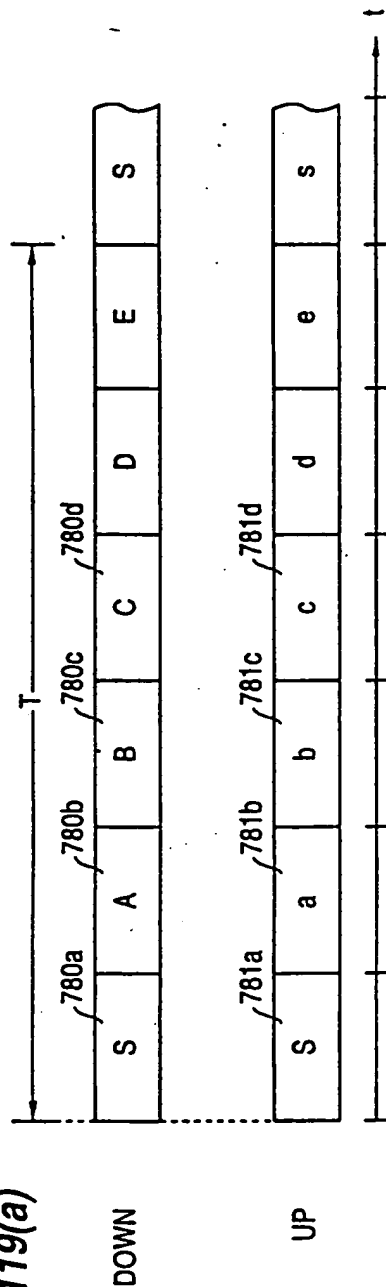


FIG. 119(b)

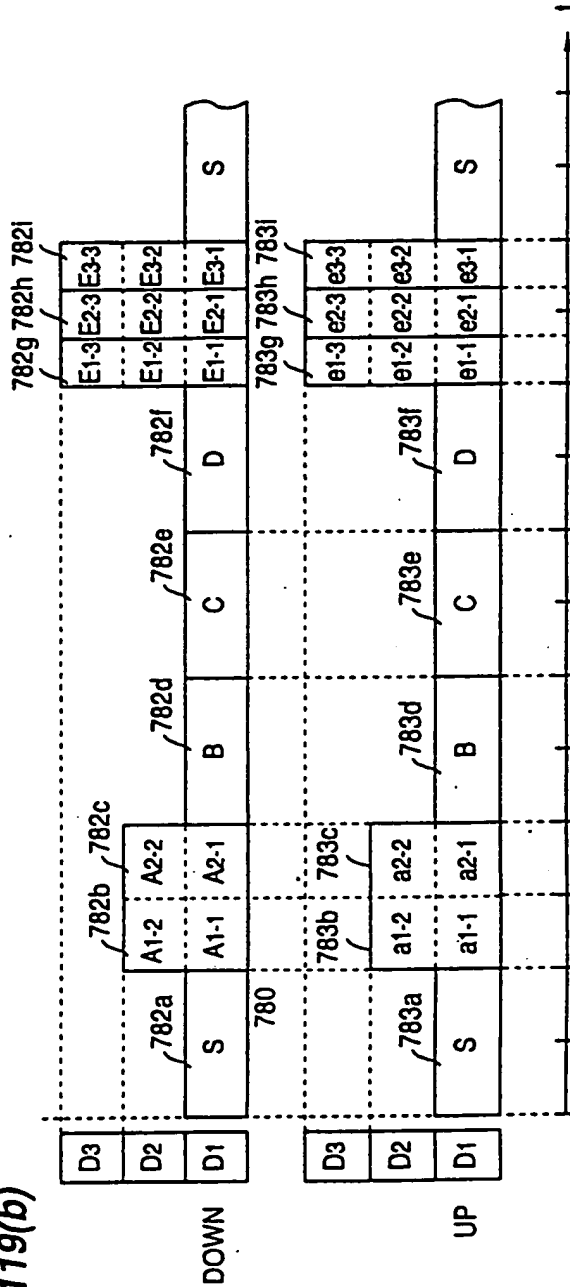




FIG. 120(a)

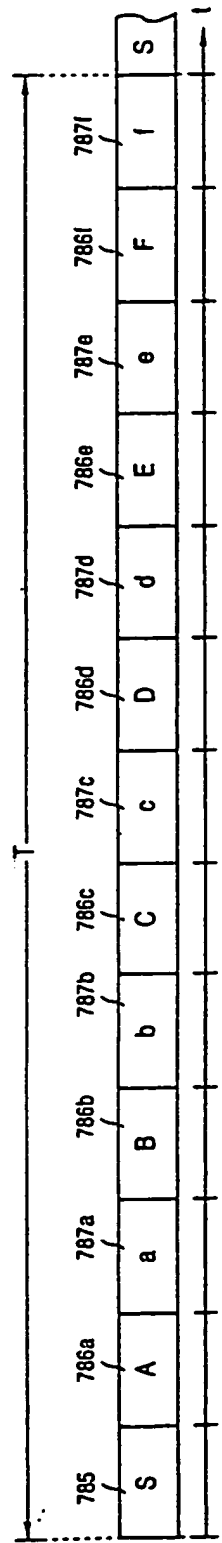


FIG. 120(b)

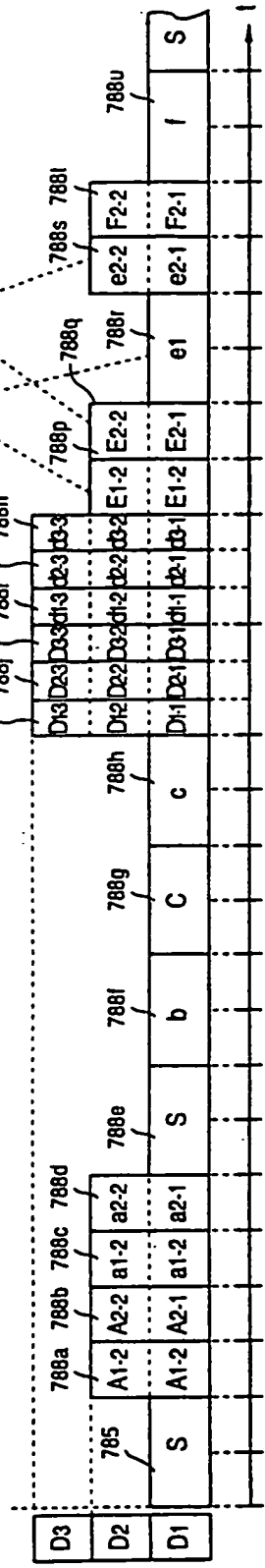




FIG. 121

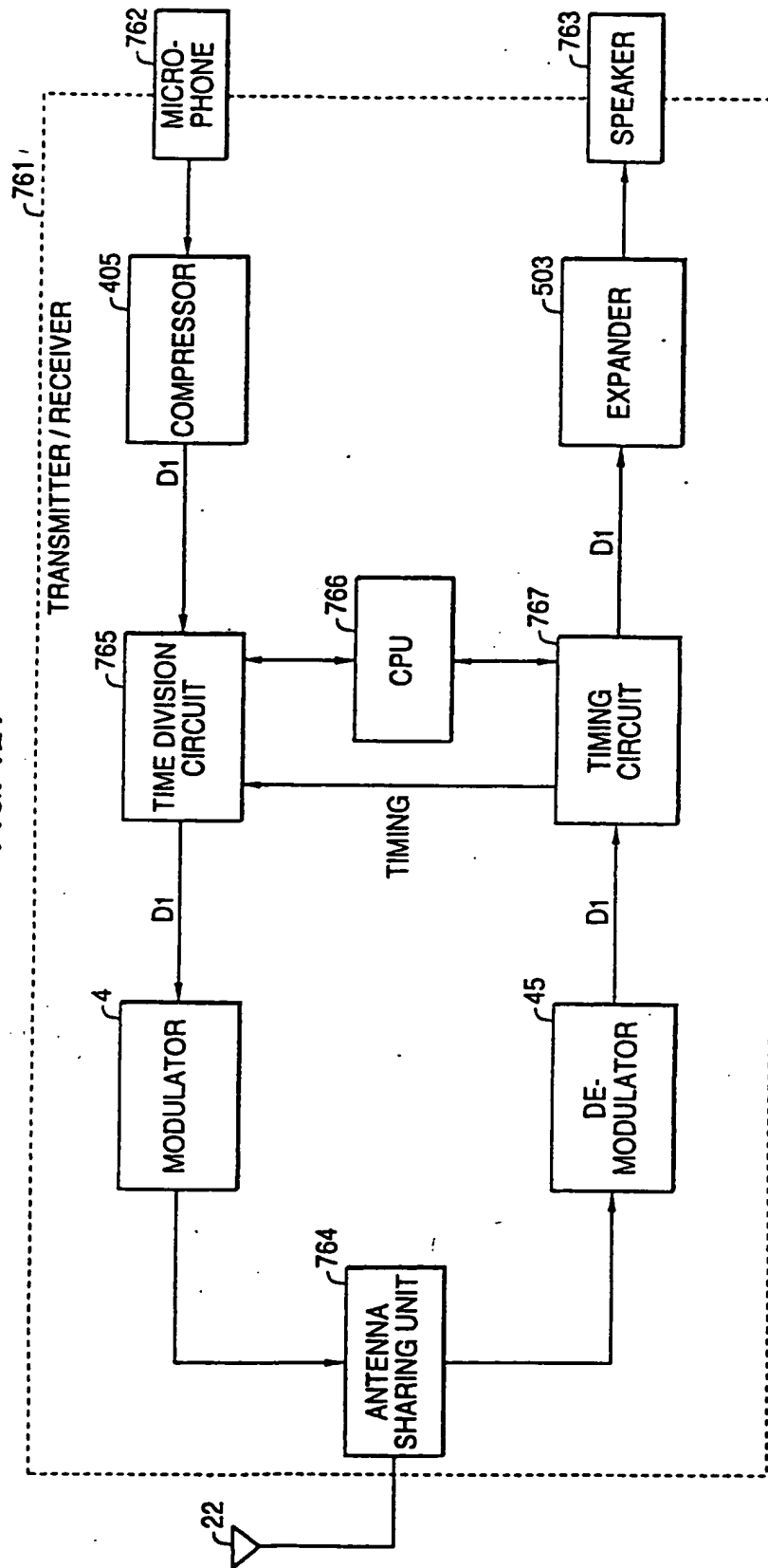






FIG. 122

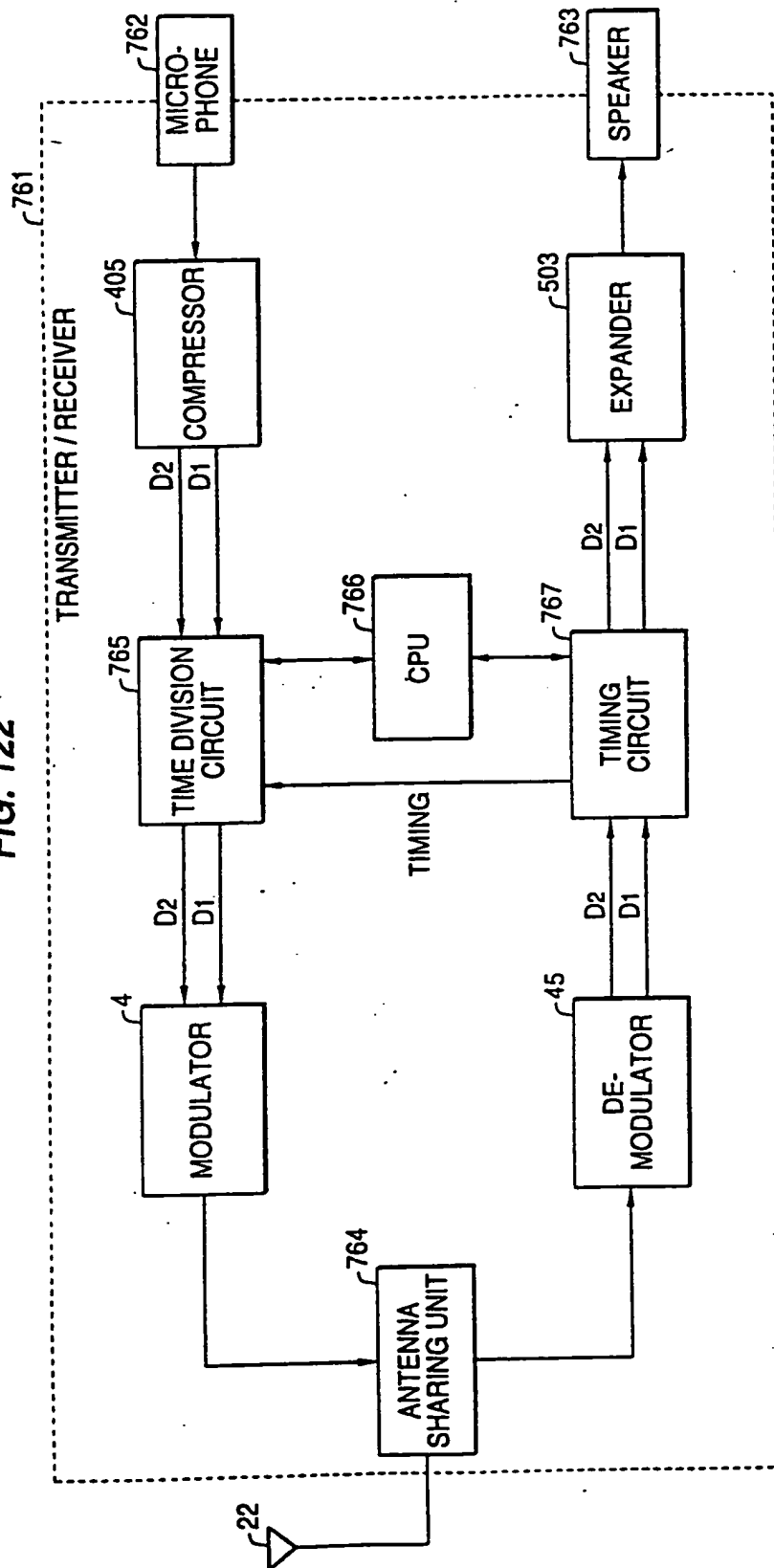
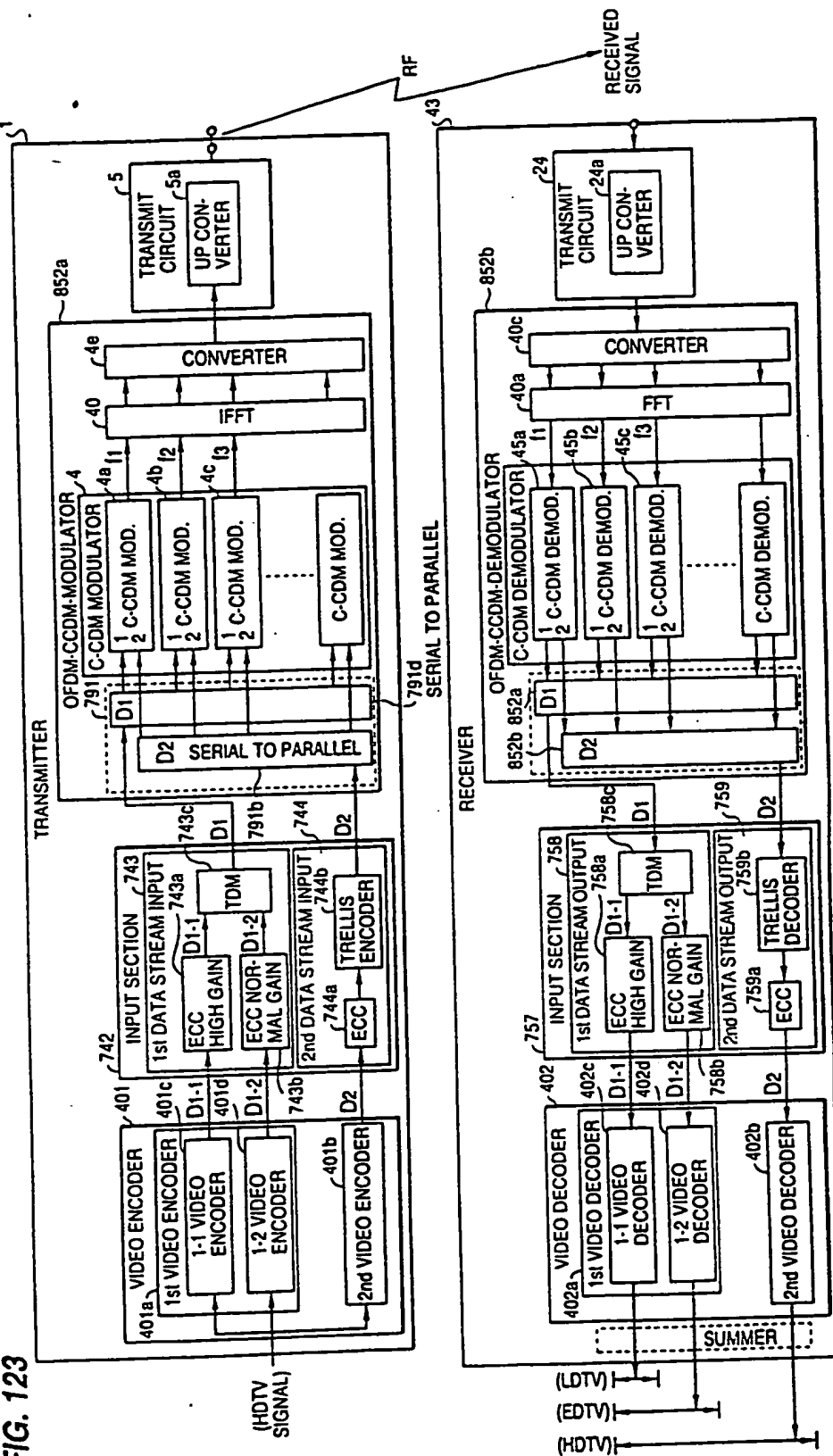




FIG. 123



**FIG. 124**

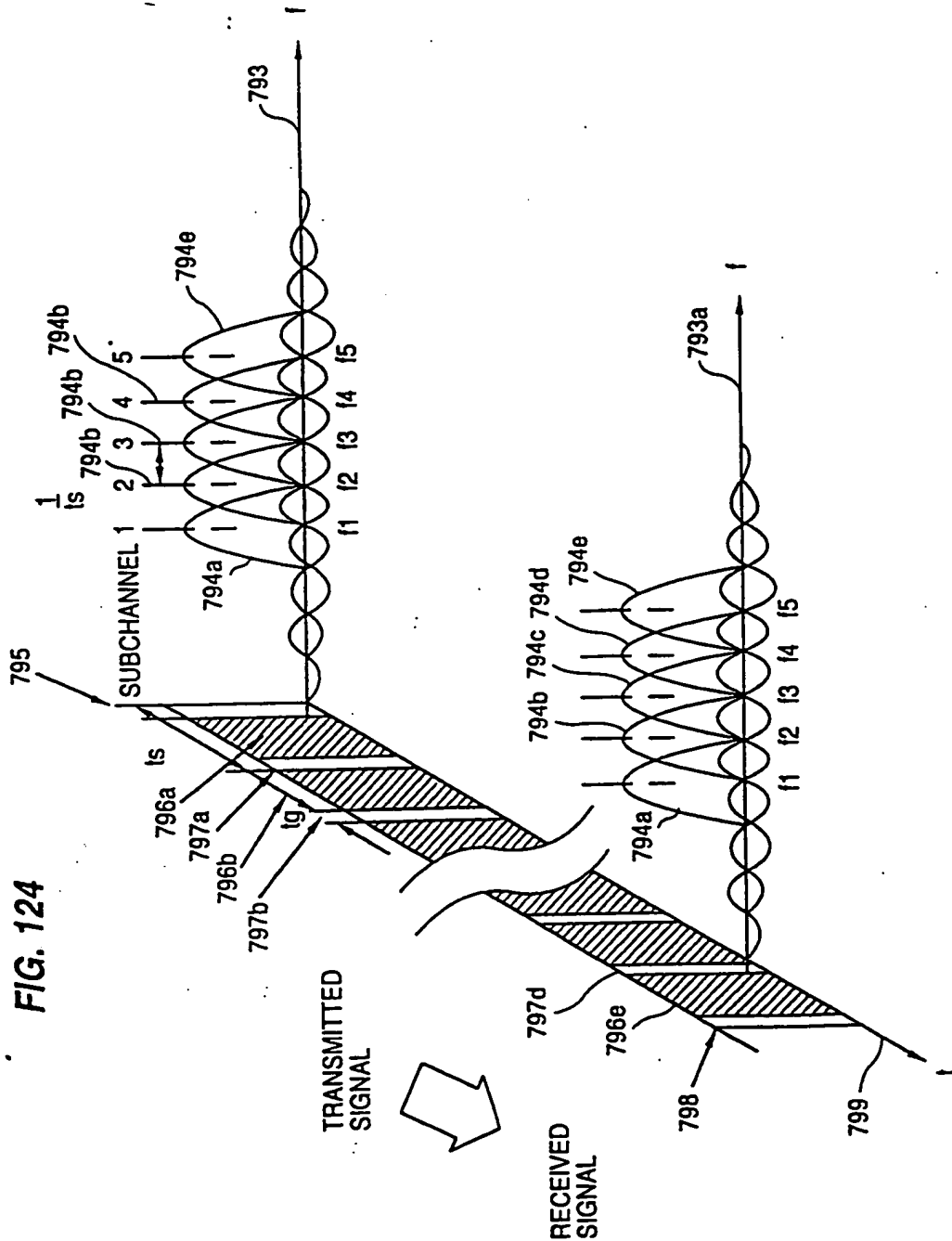




FIG. 125(a)

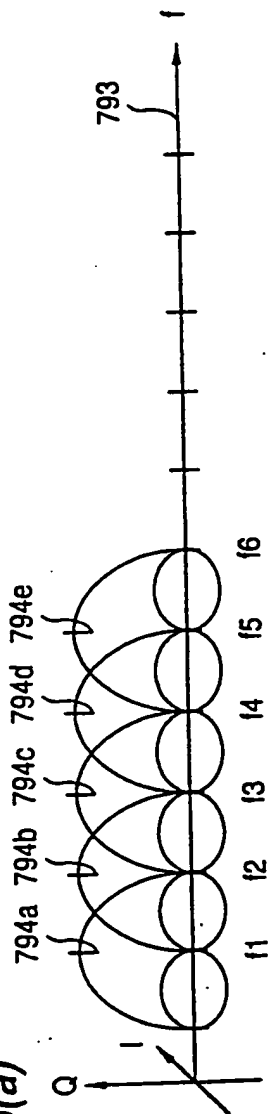
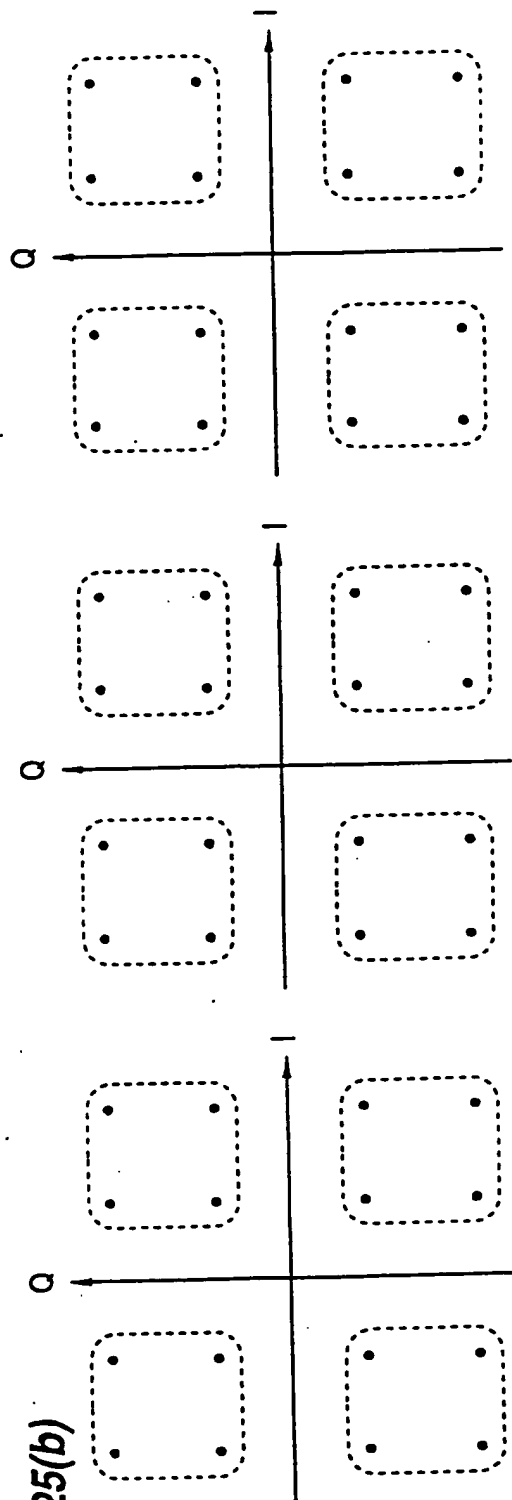


FIG. 125(b)



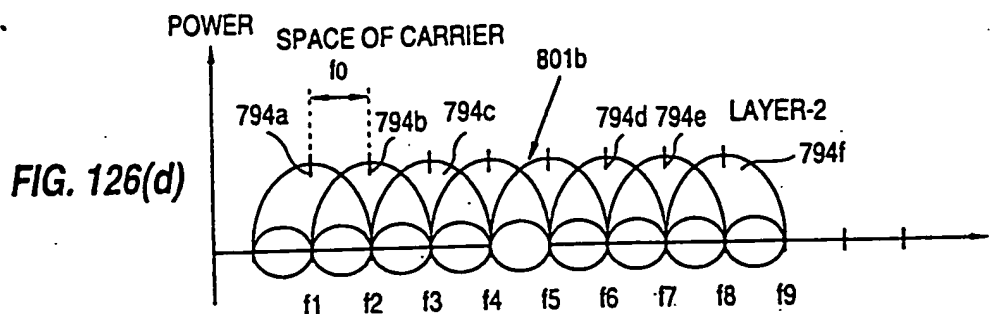
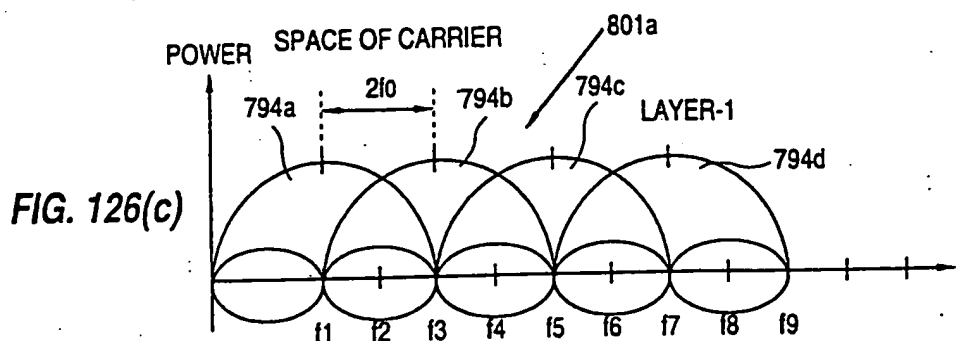
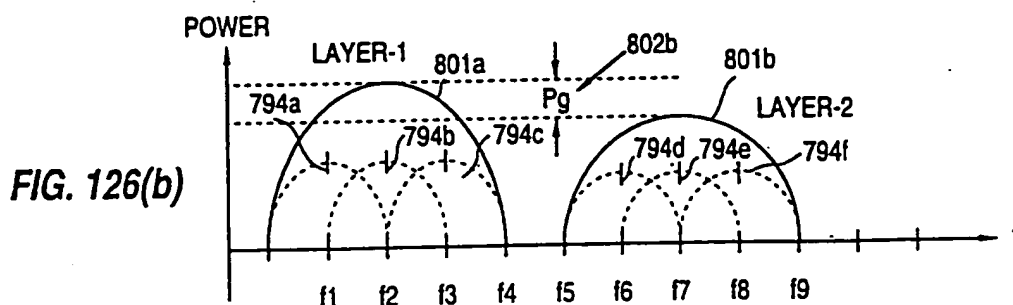
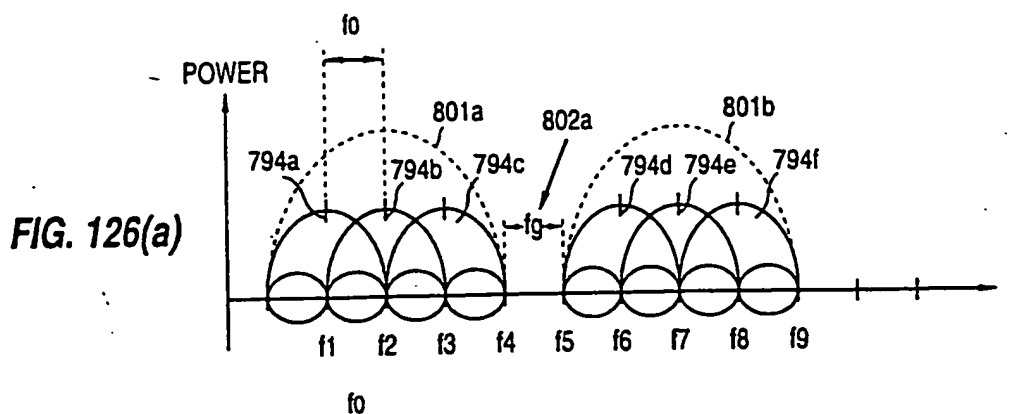




FIG. 127

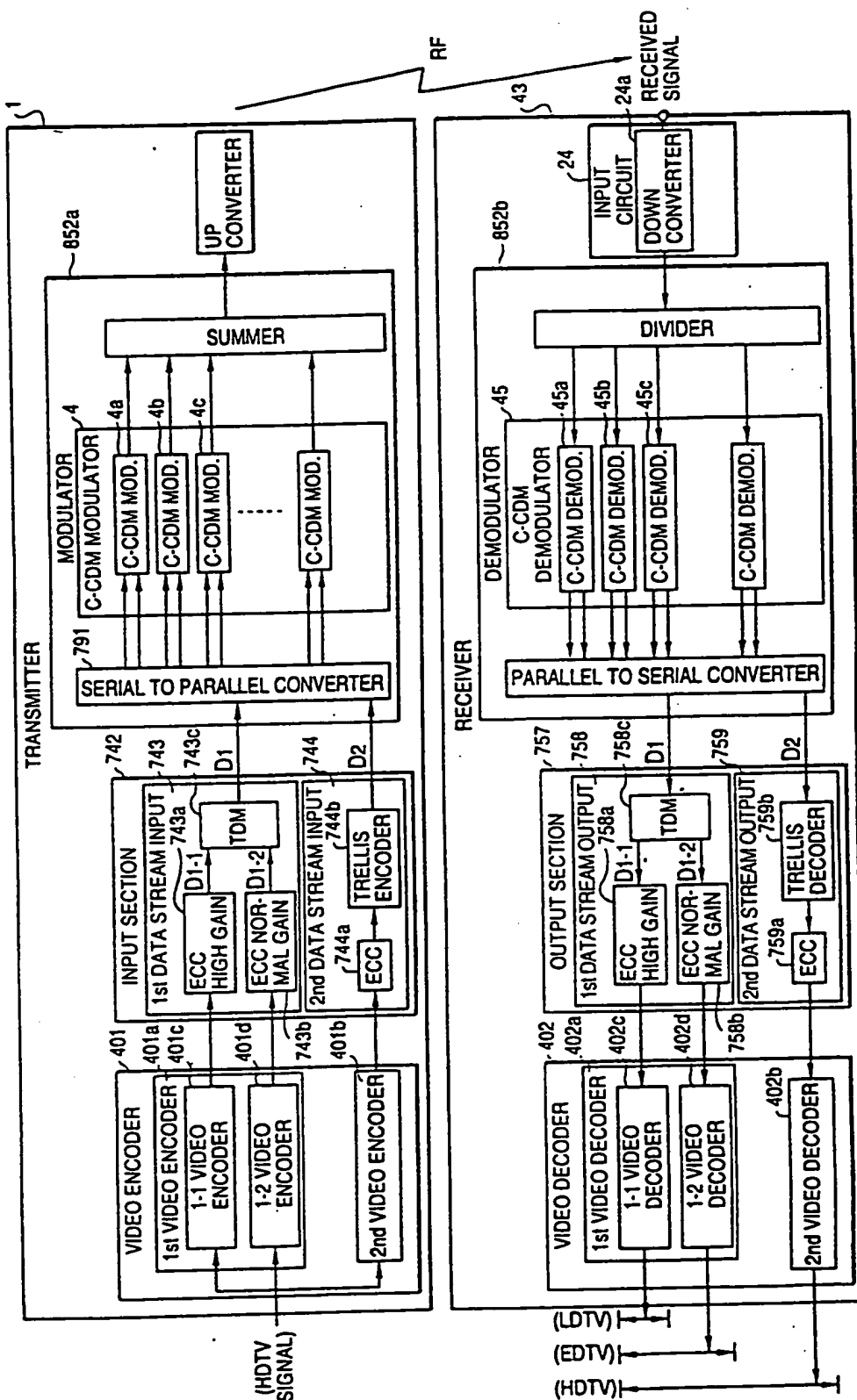




FIG. 128(a)

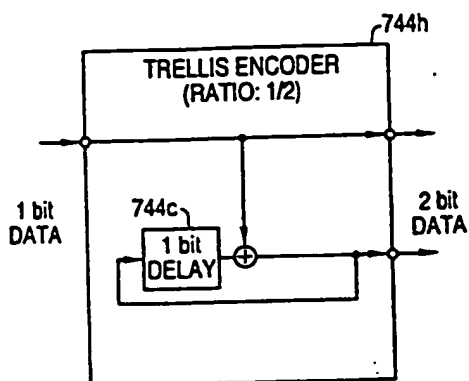


FIG. 128(d)

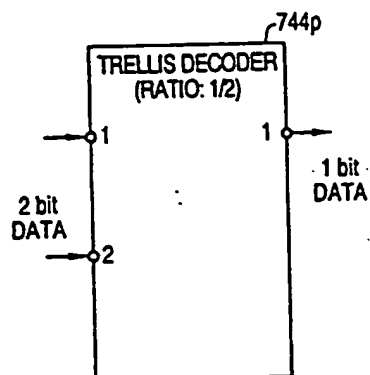


FIG. 128(b)

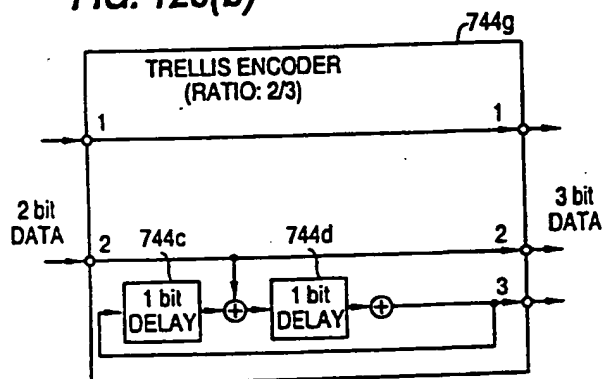


FIG. 128(e)

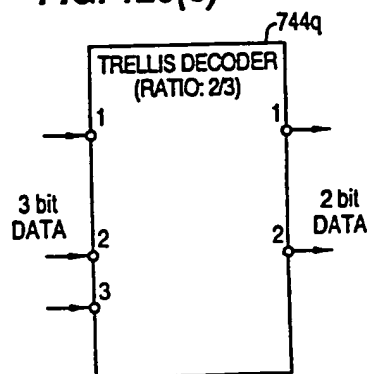


FIG. 128(c)

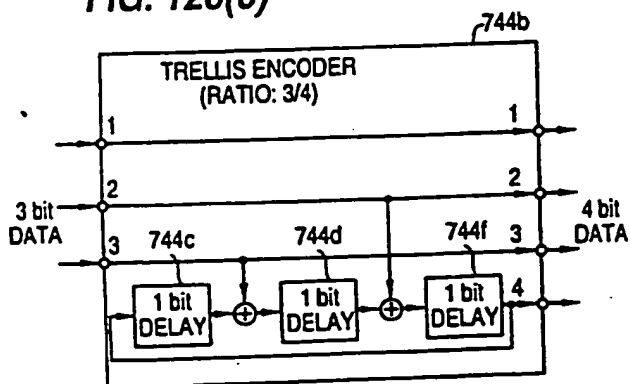


FIG. 128(f)

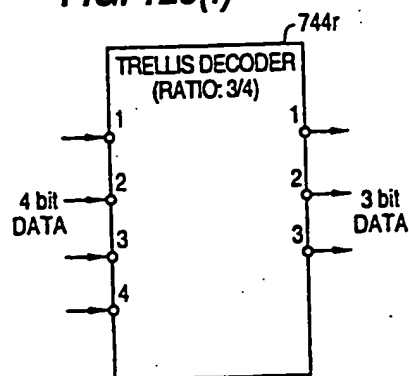
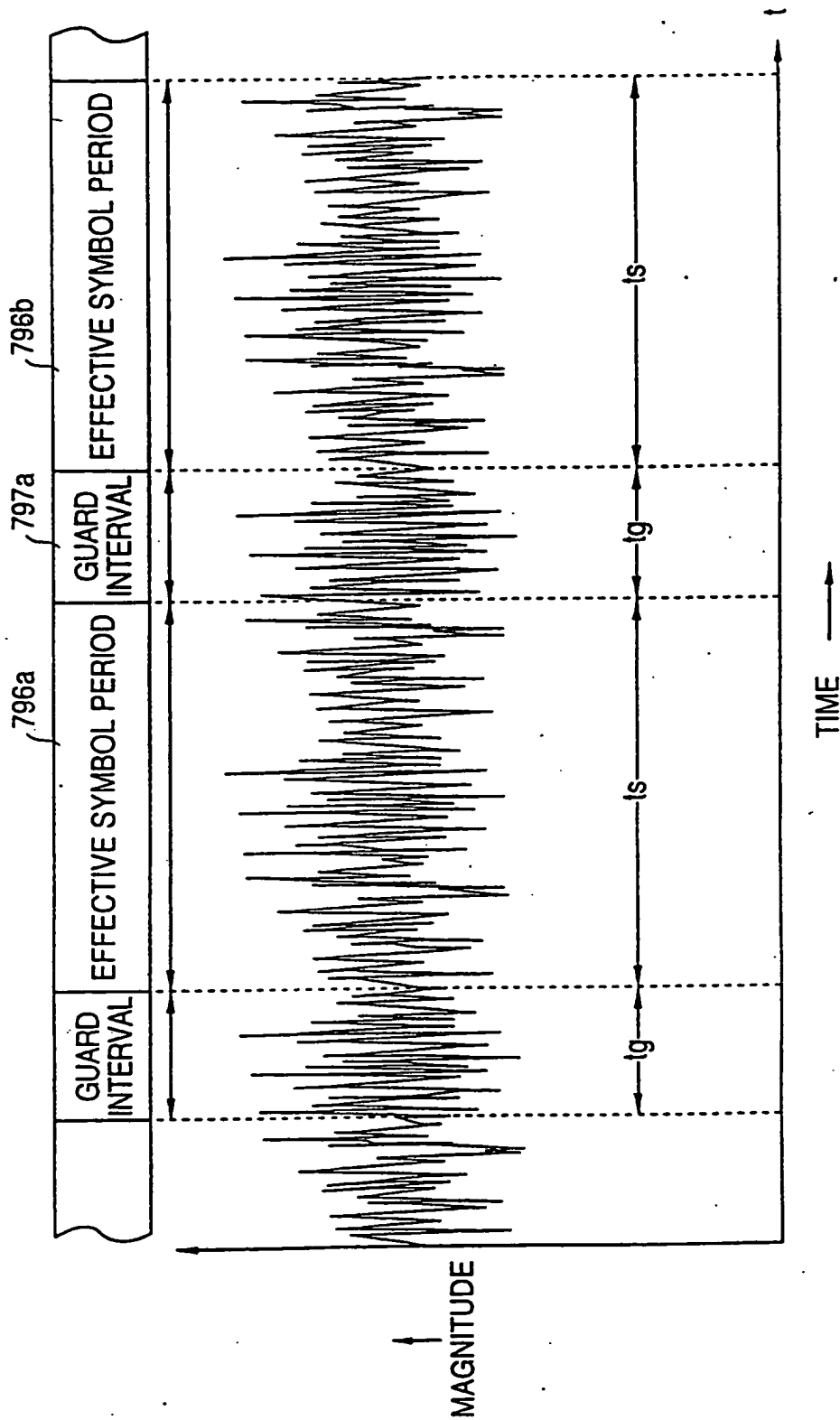




FIG. 129





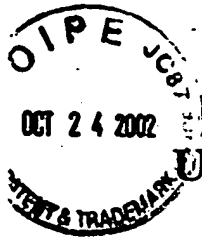


FIG. 130

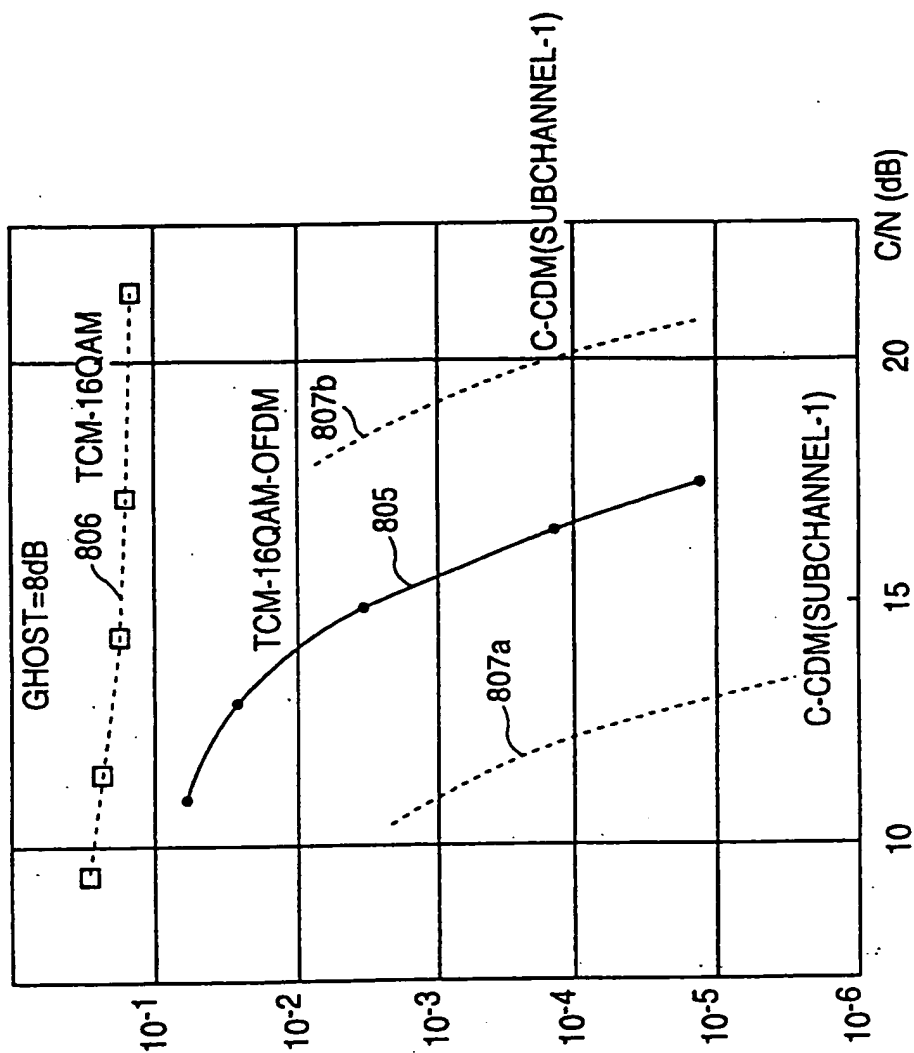




FIG. 131

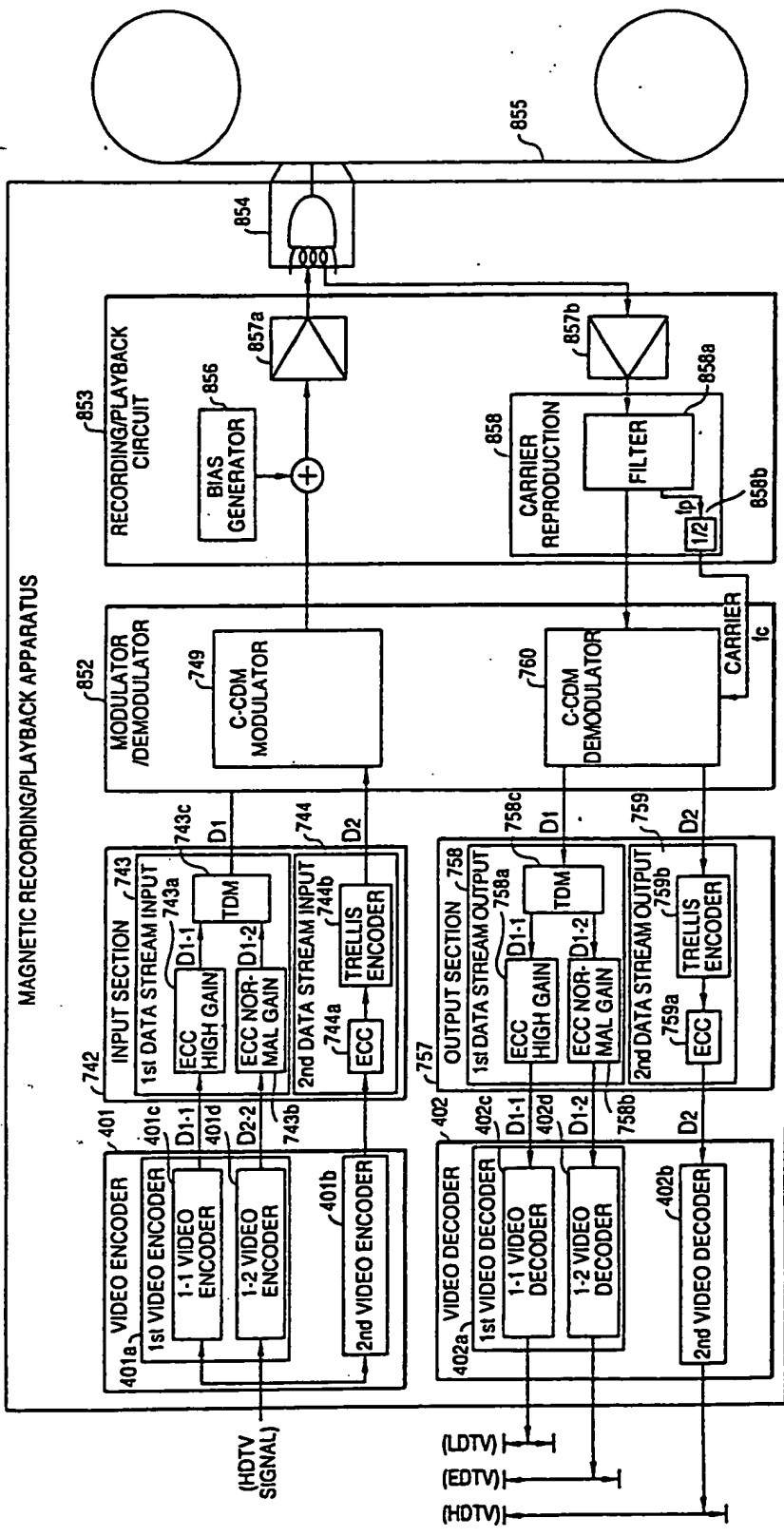






FIG. 133

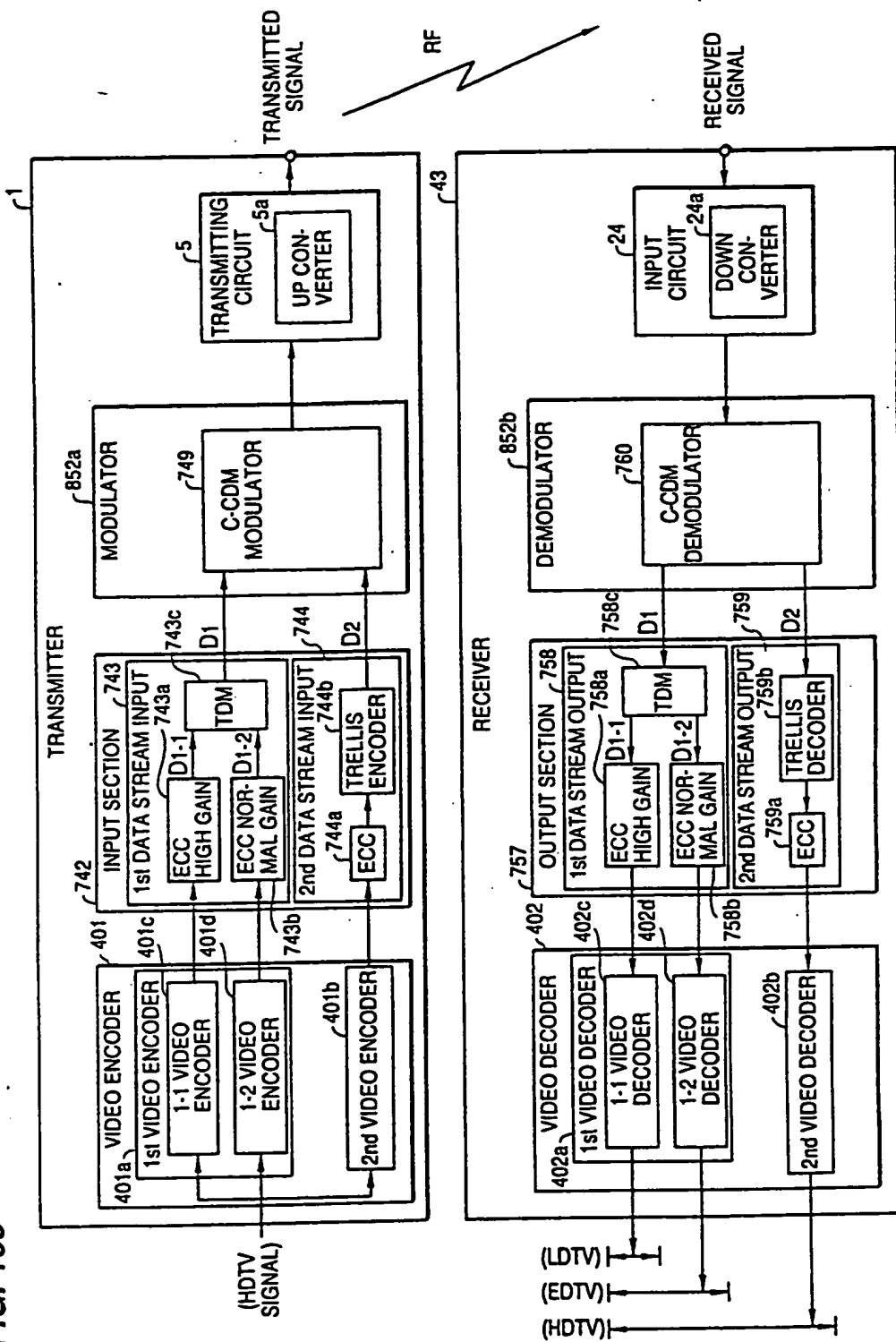


FIG. 134

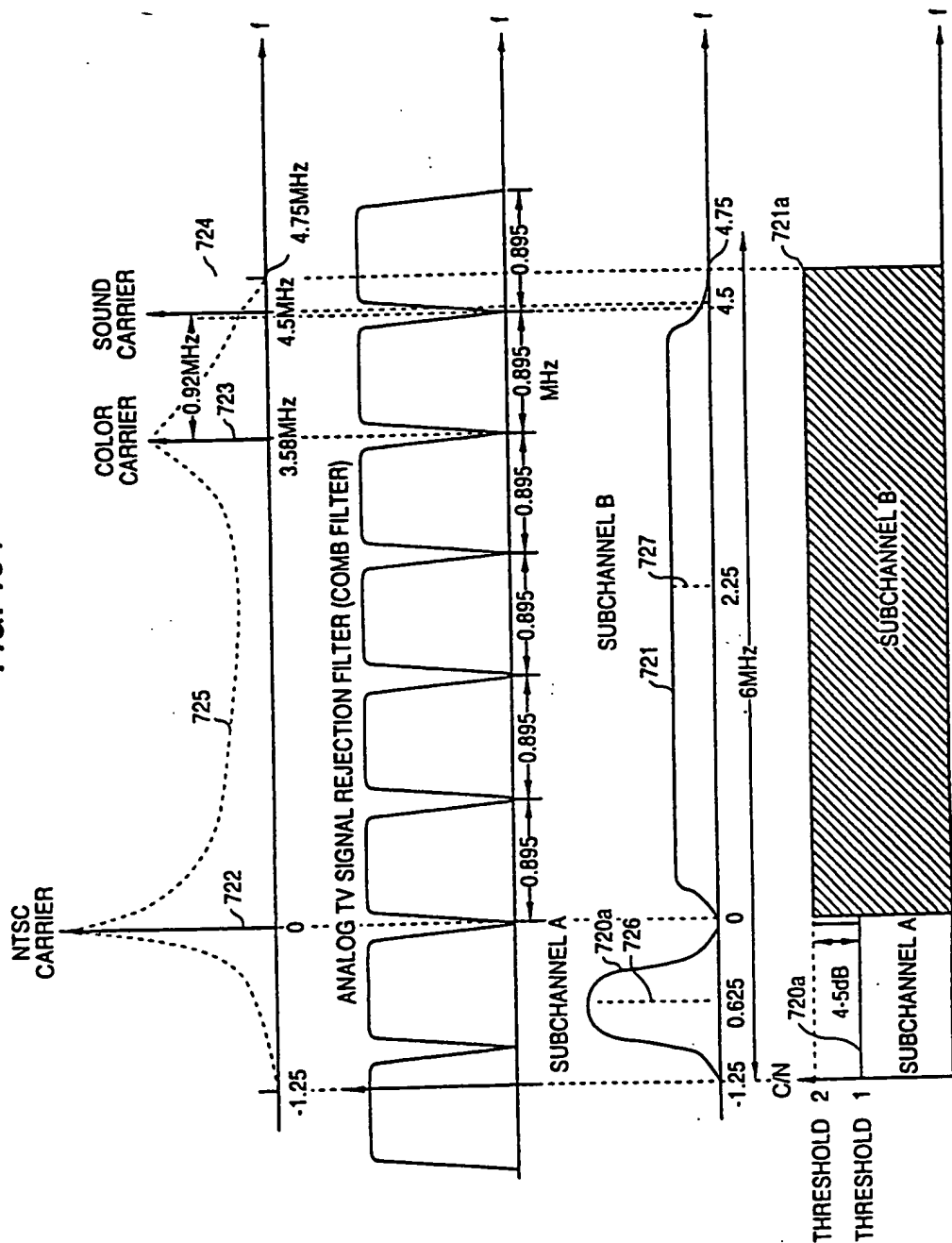




FIG. 135

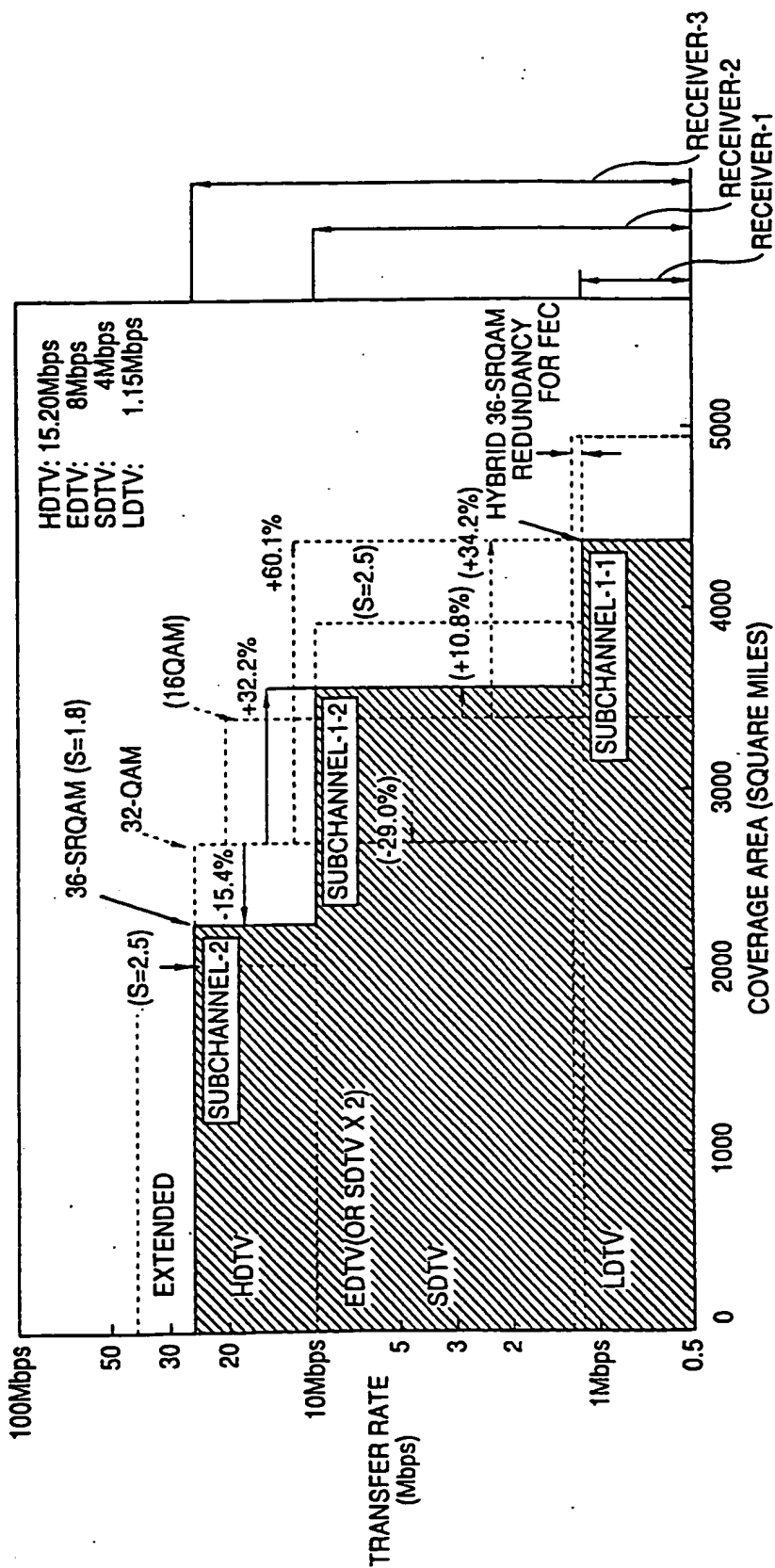


FIG. 136

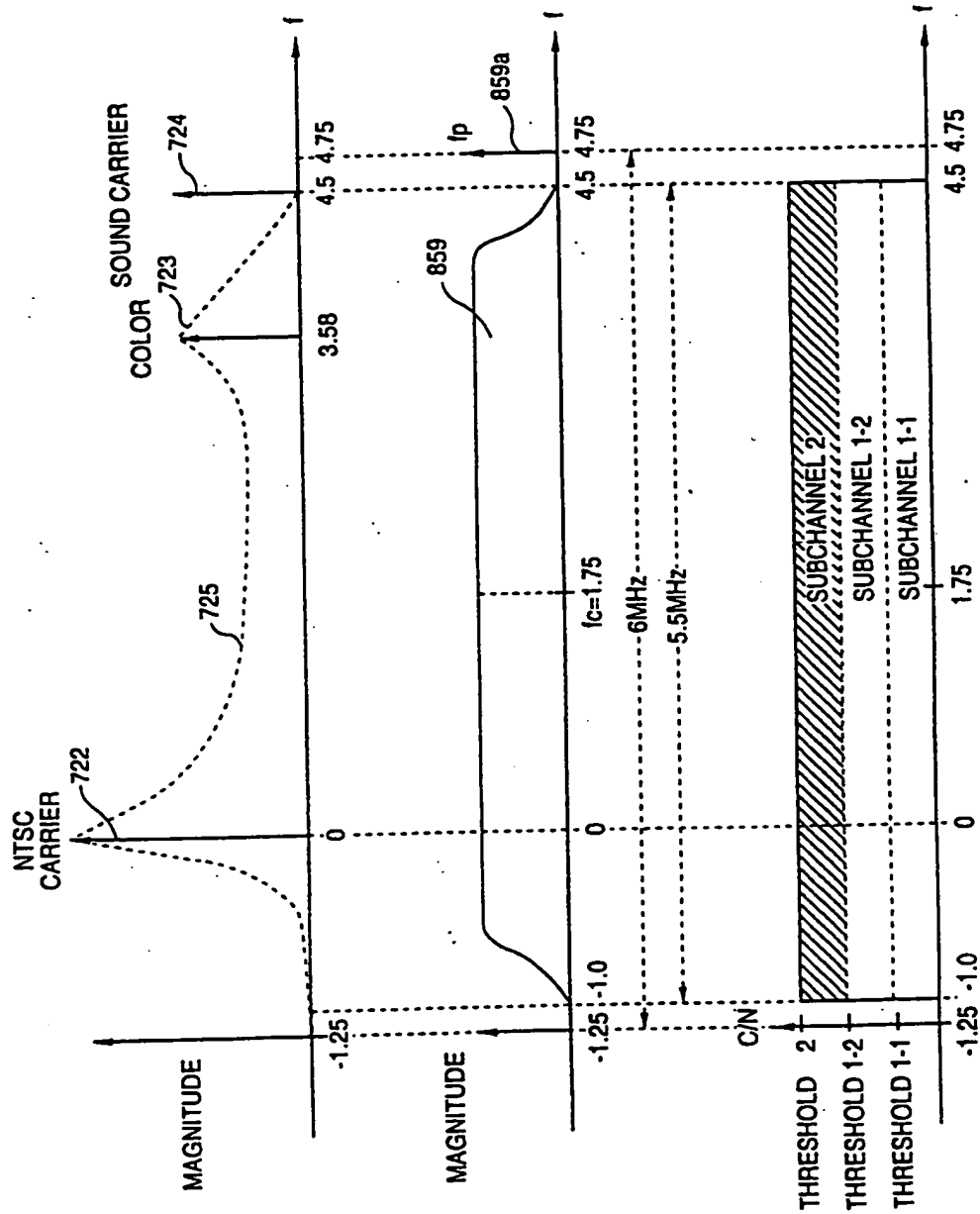




FIG. 137

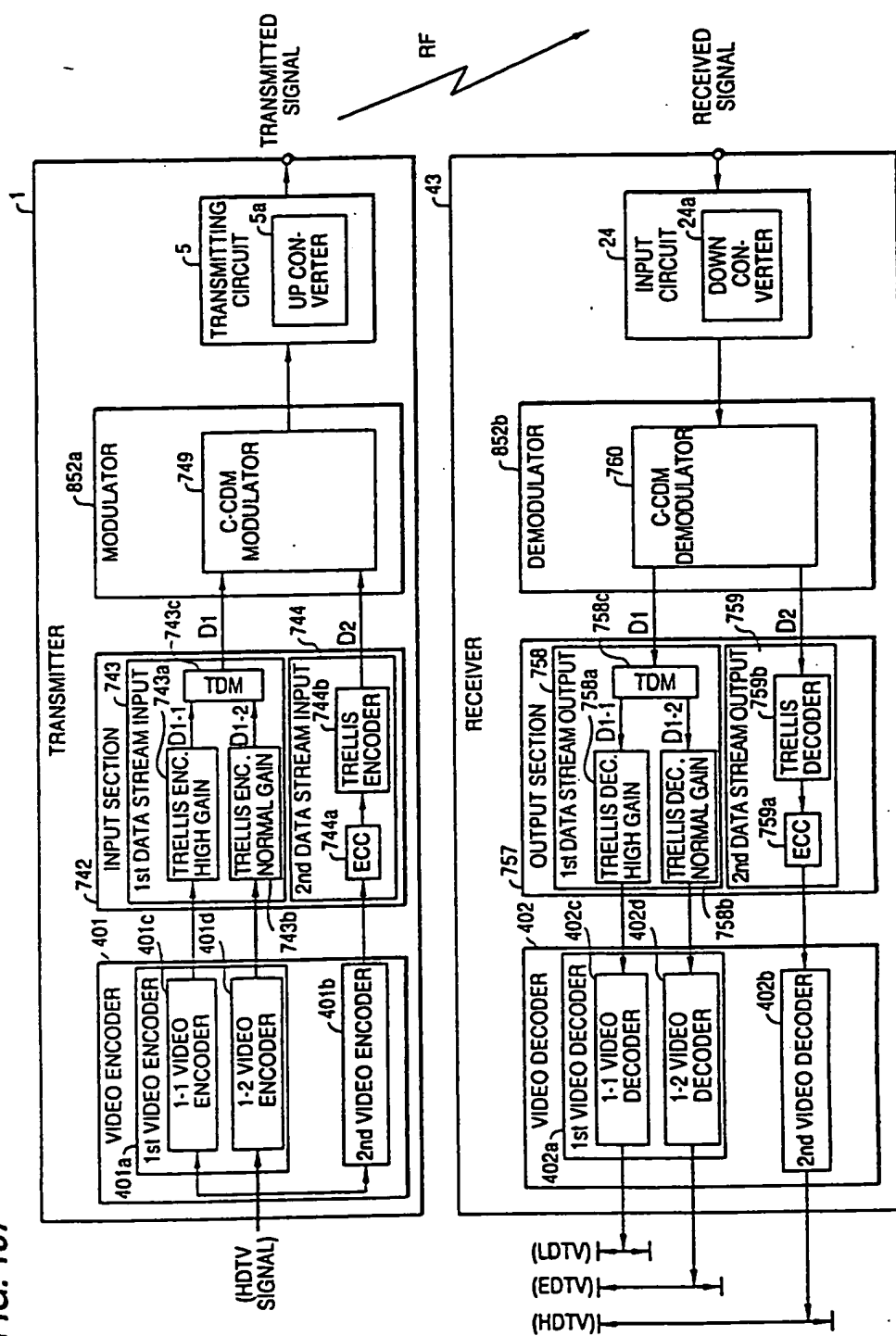




FIG. 138

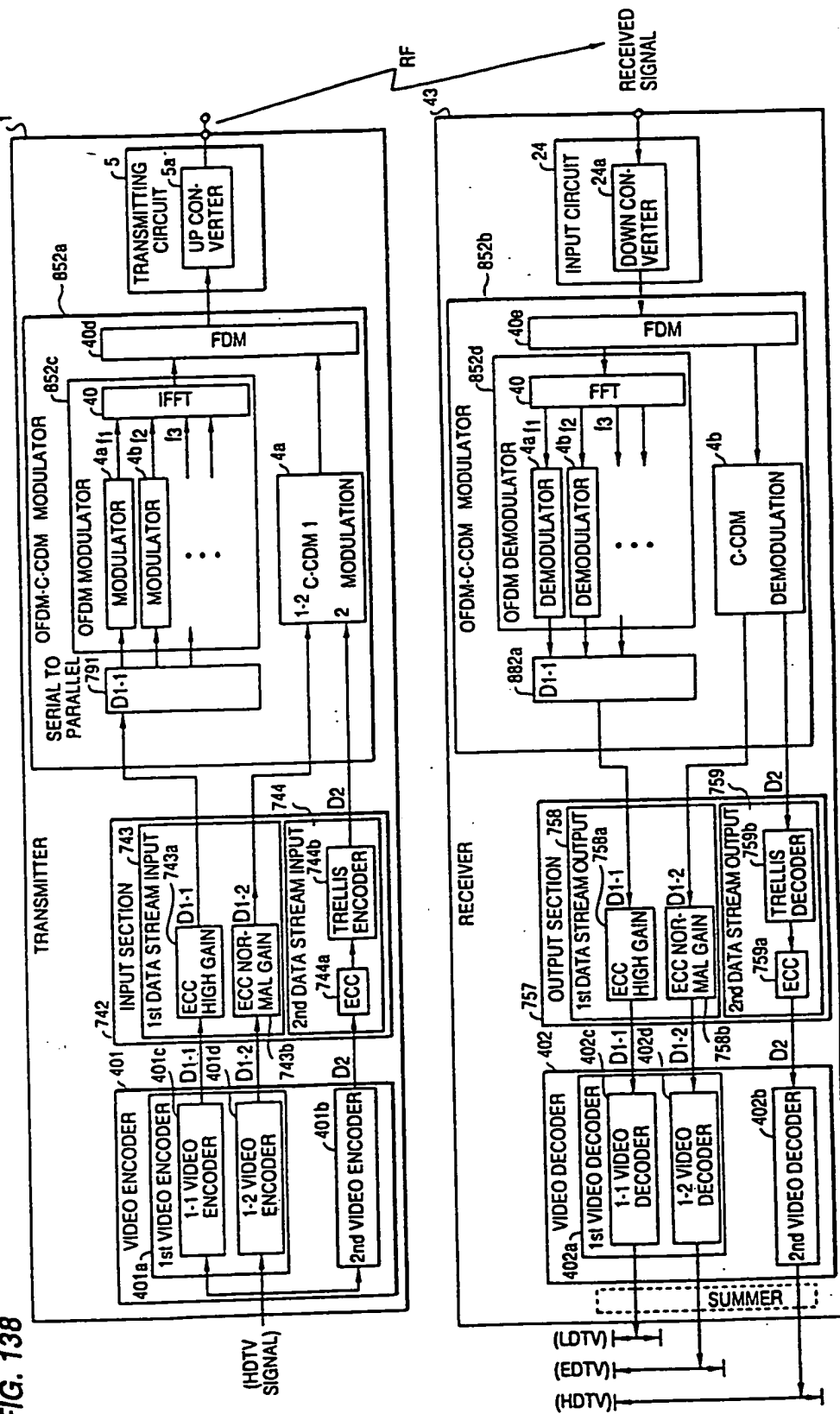




FIG. 139

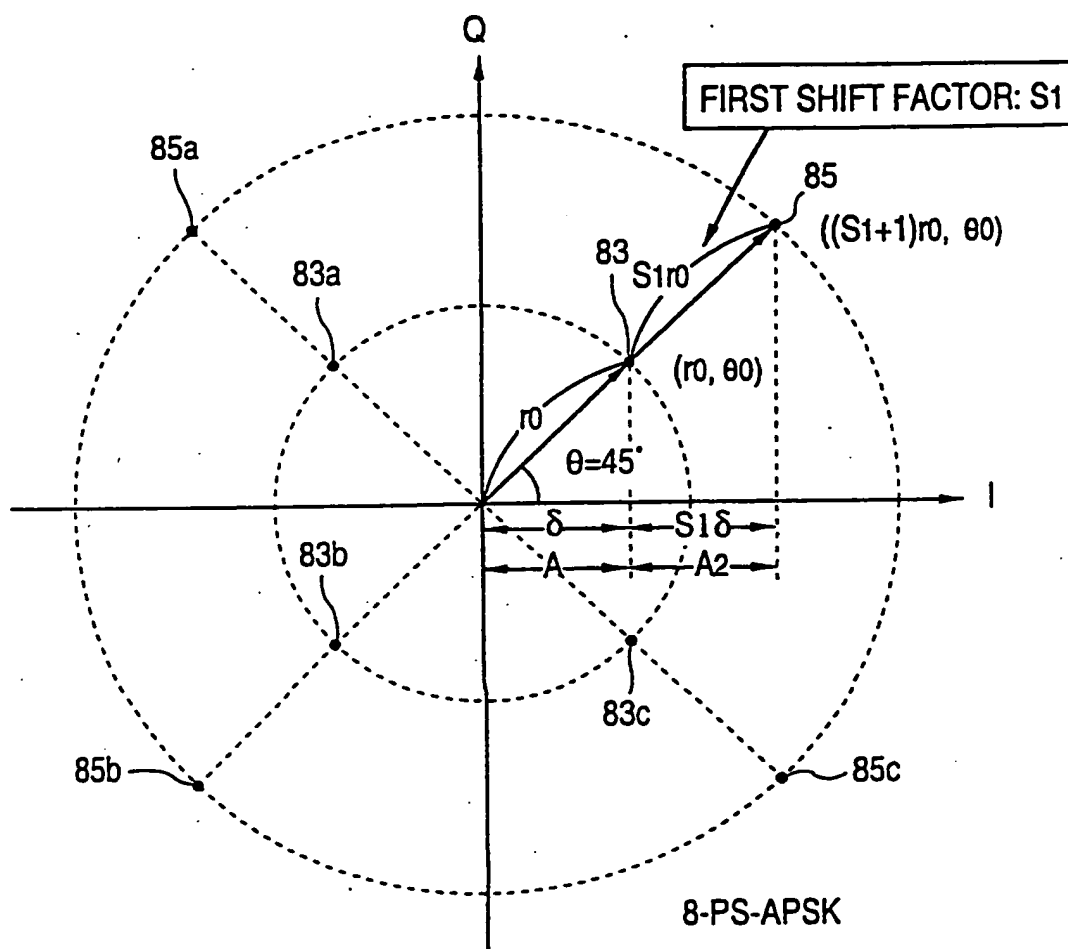




FIG. 140

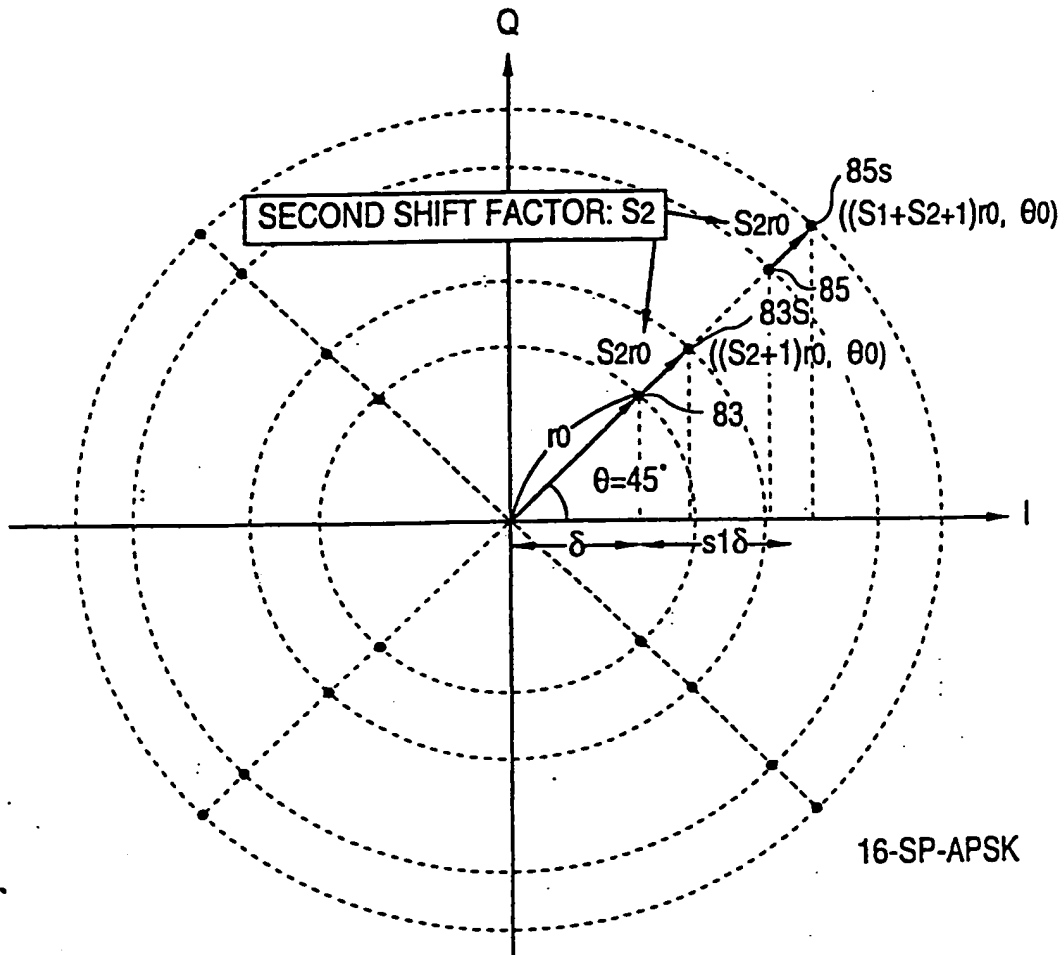




FIG. 141

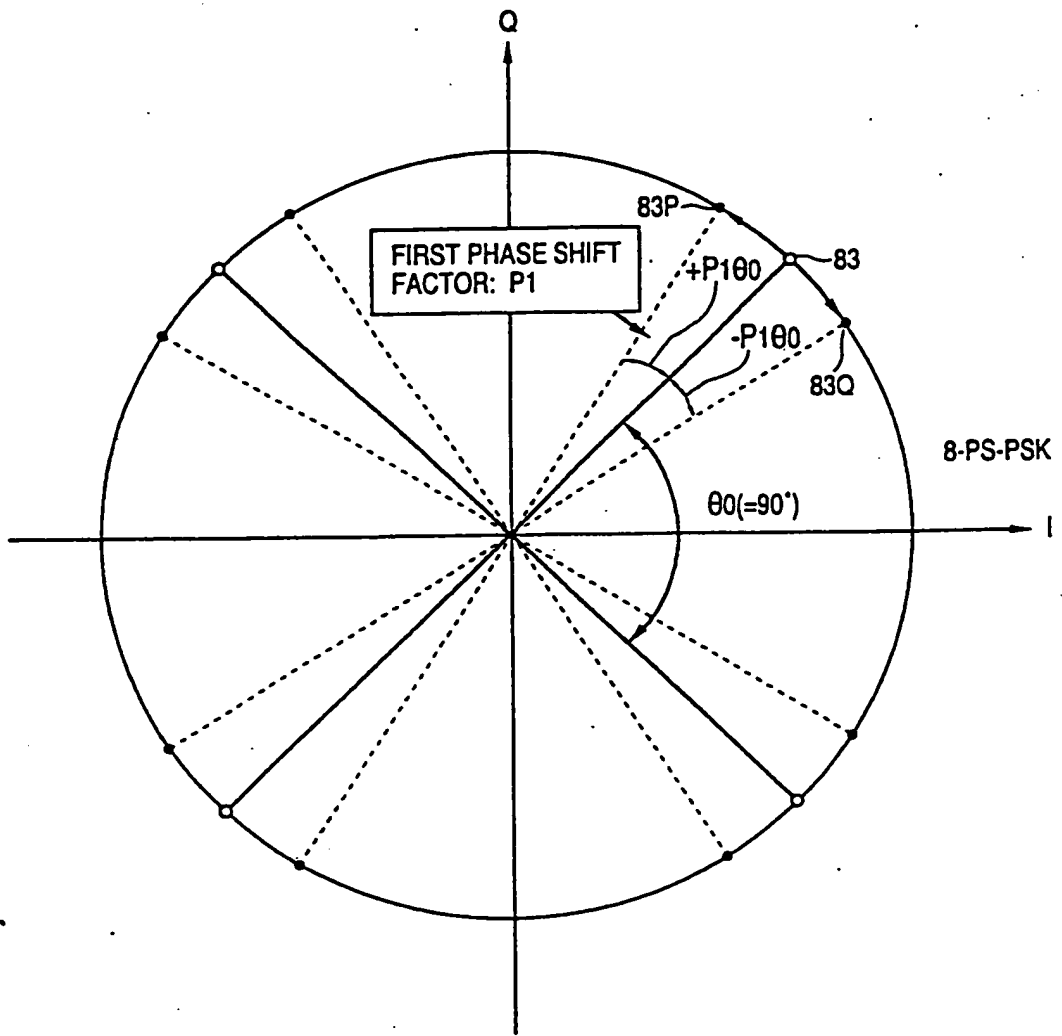


FIG. 142

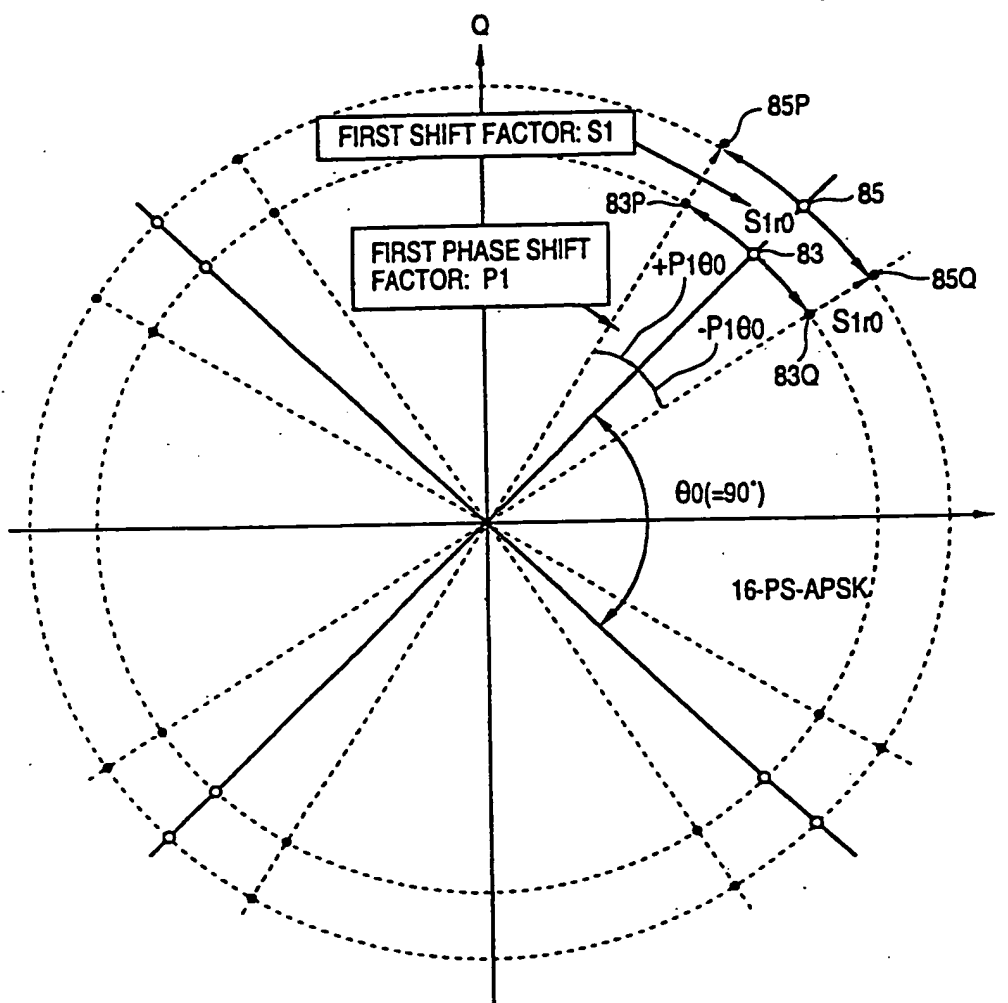




FIG. 143

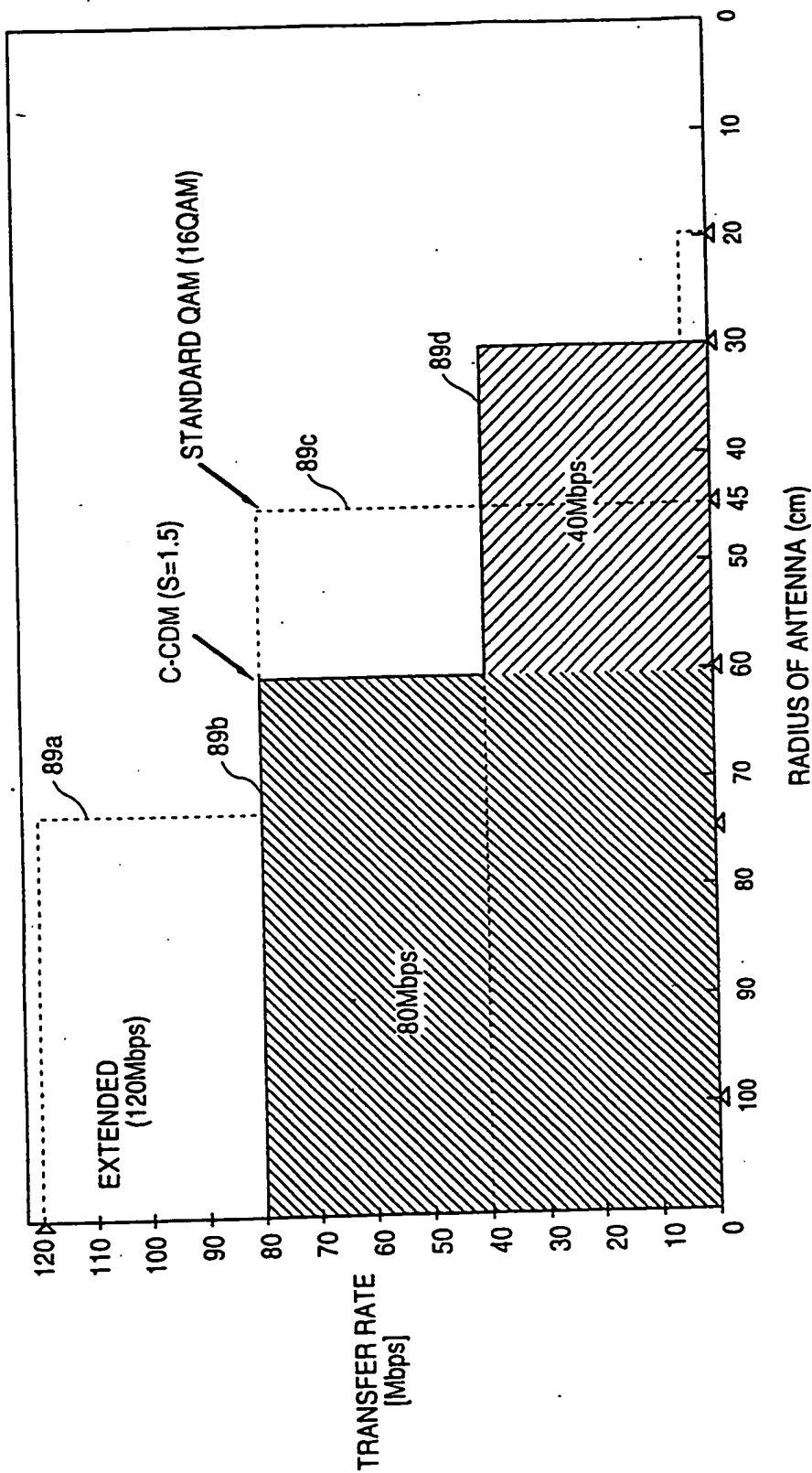


FIG. 144

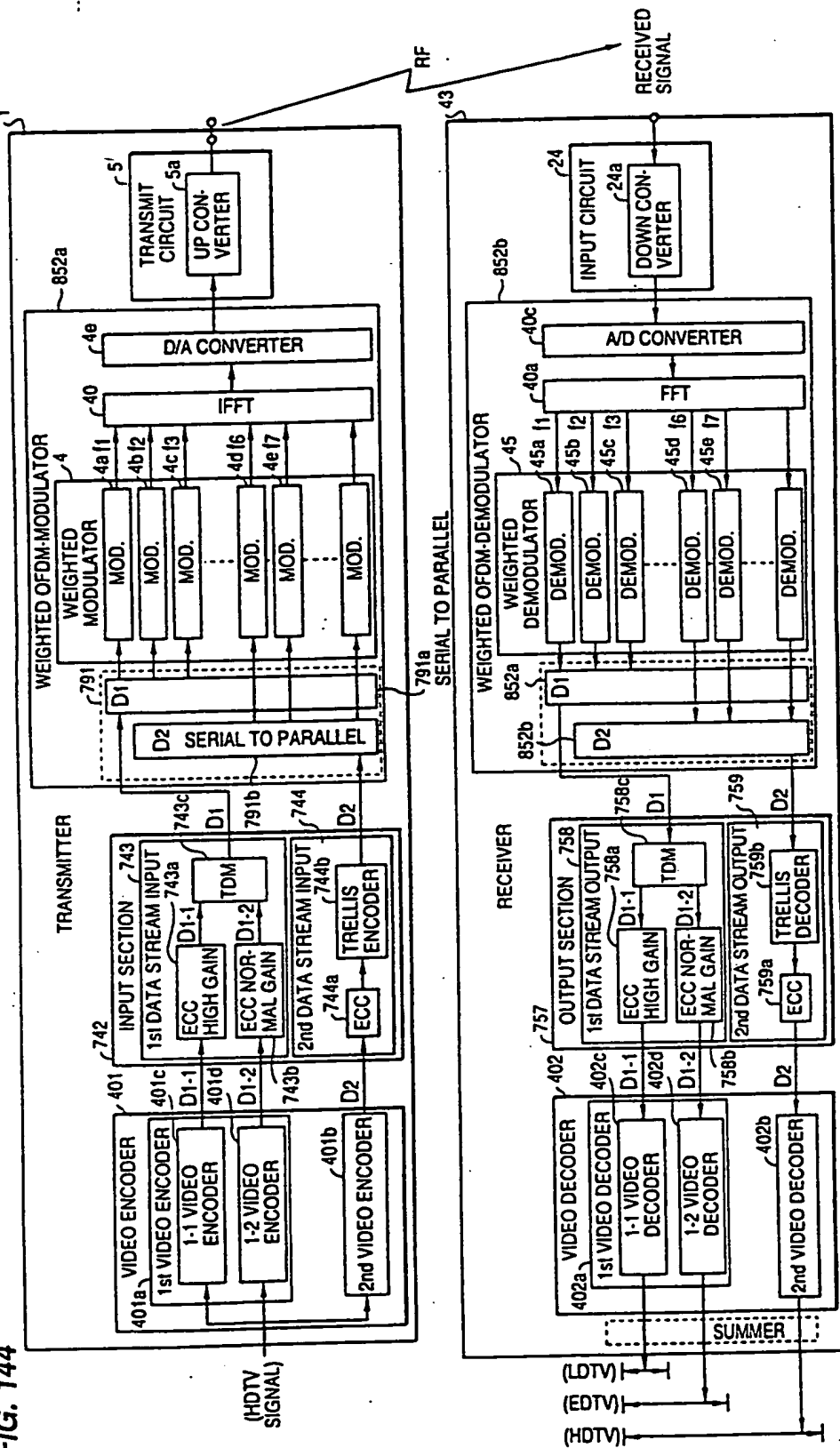




FIG. 145(a)

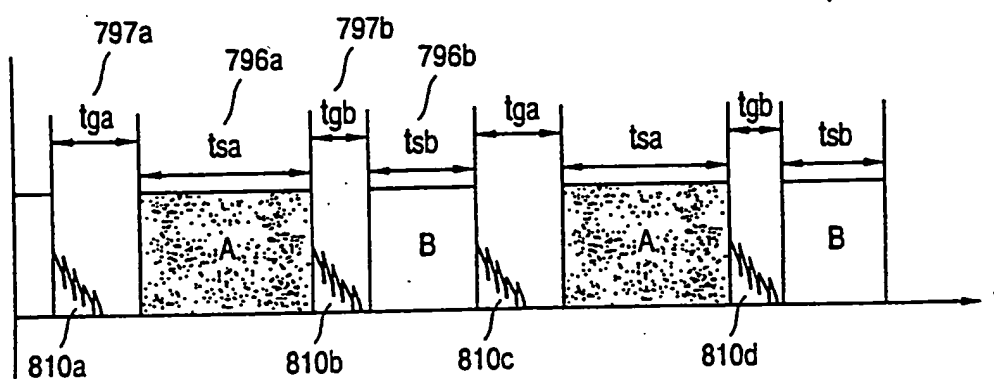
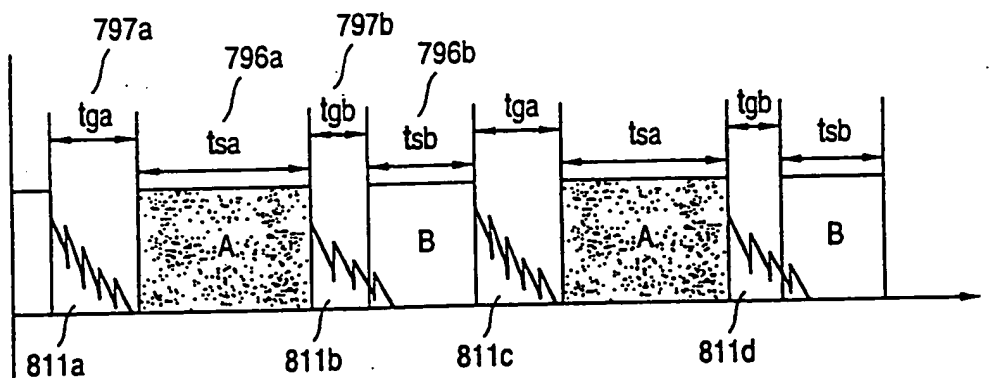


FIG. 145(b)





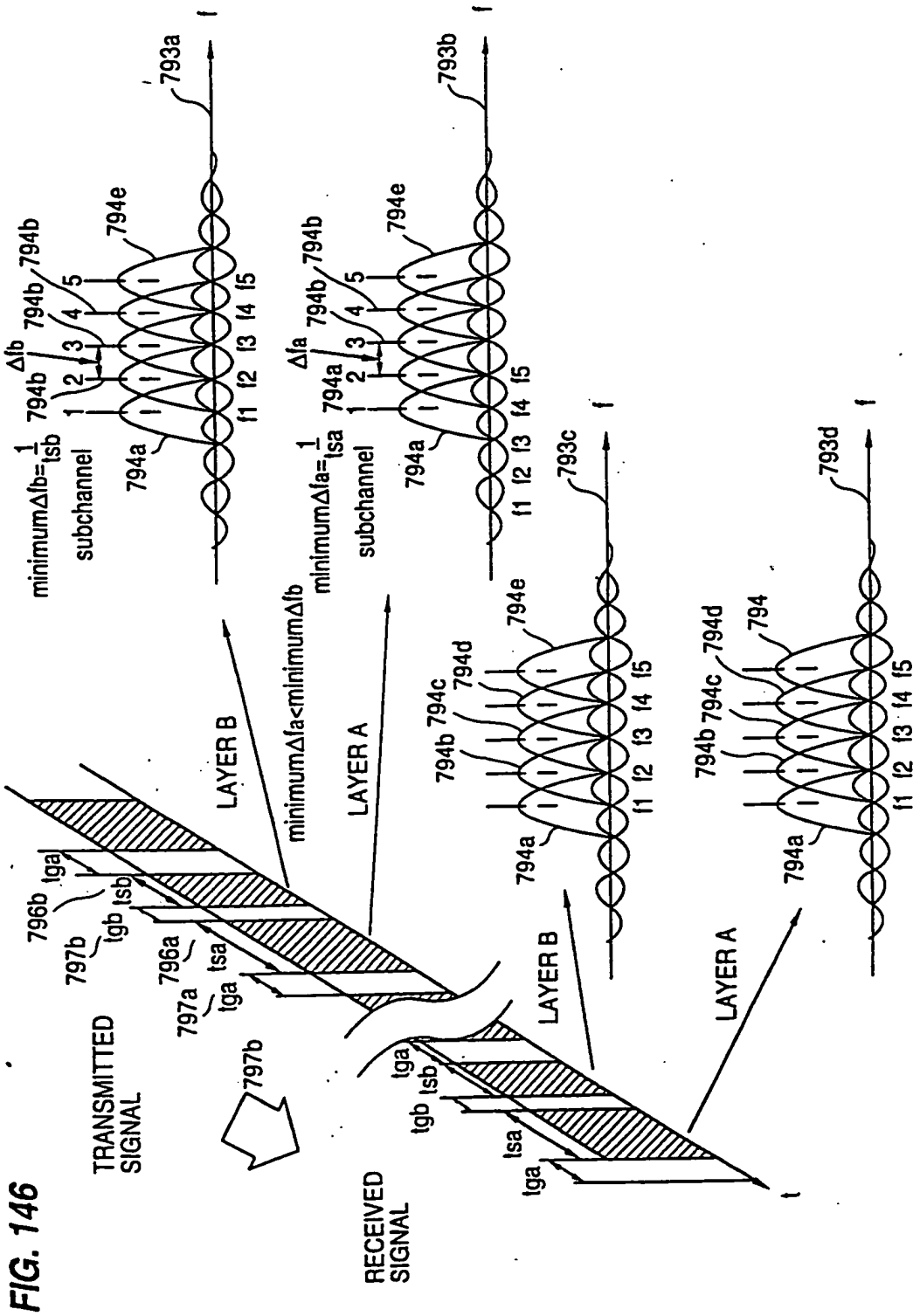




FIG. 147

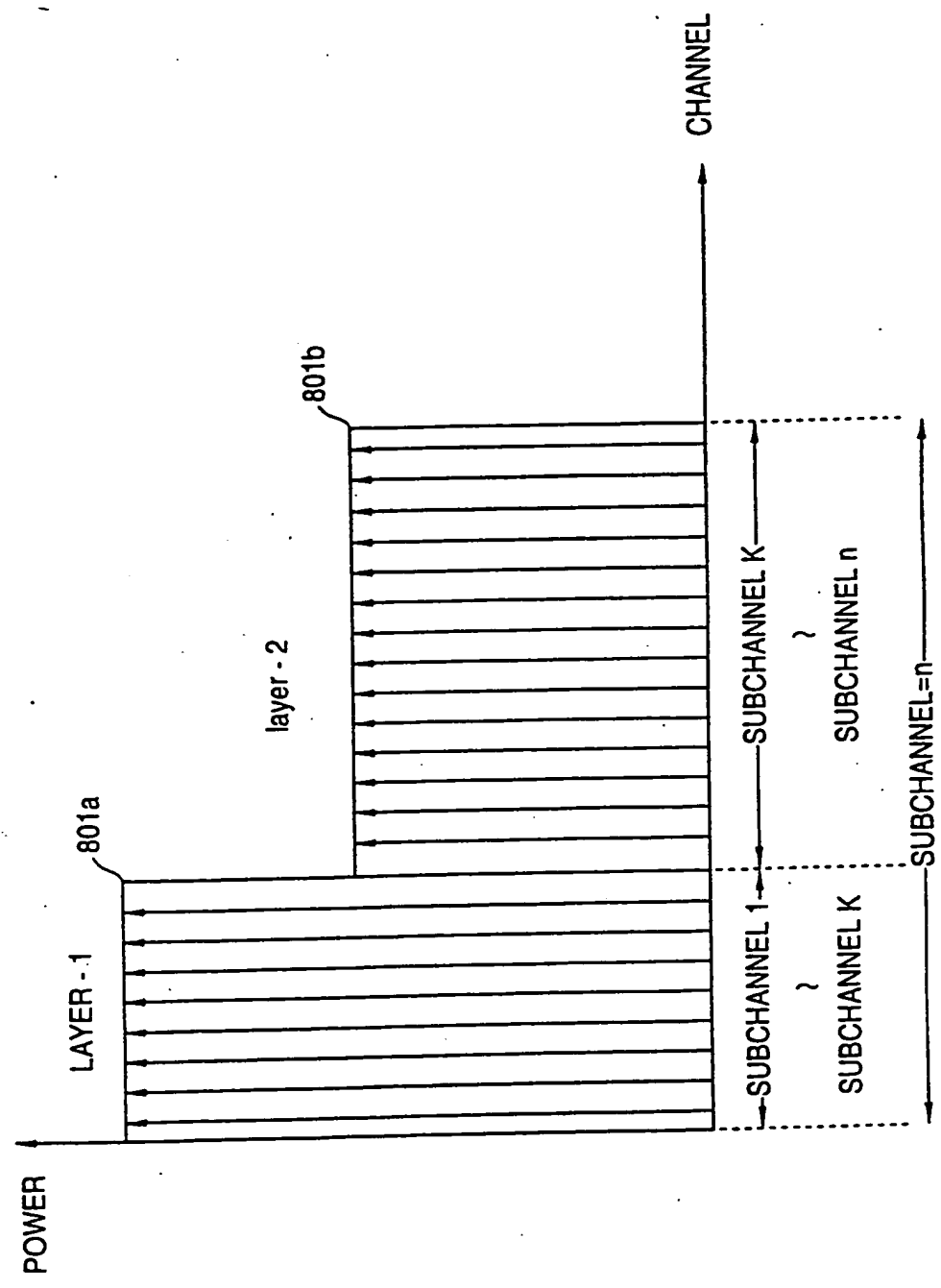
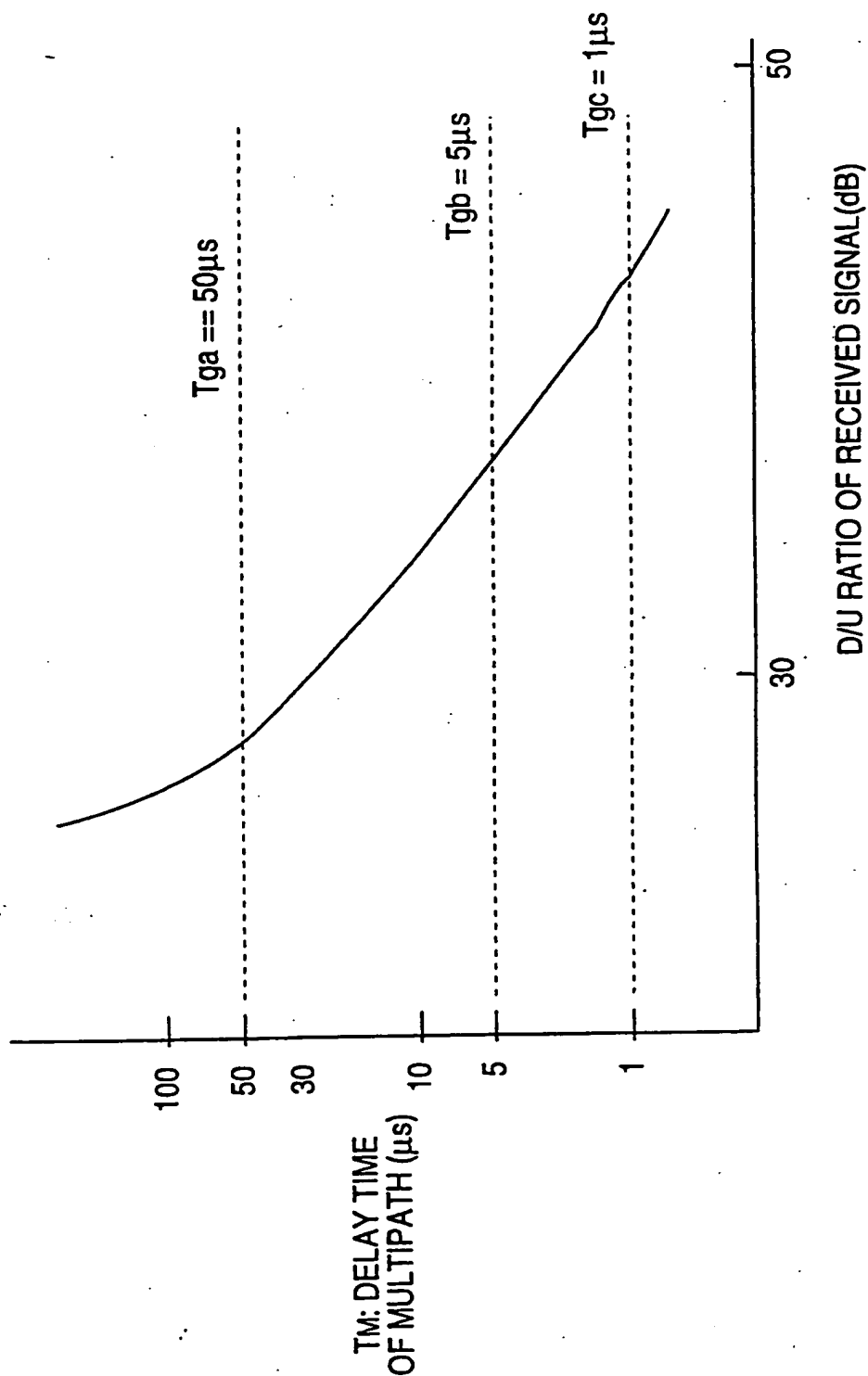




FIG. 148



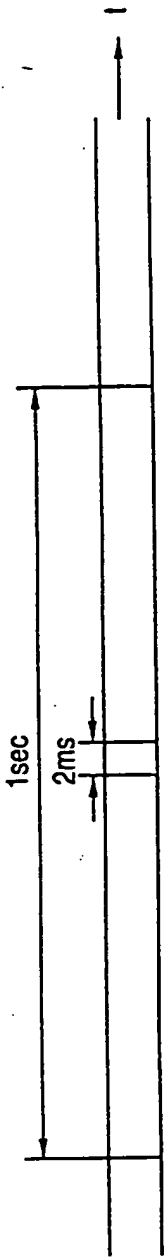


FIG. 149(a)

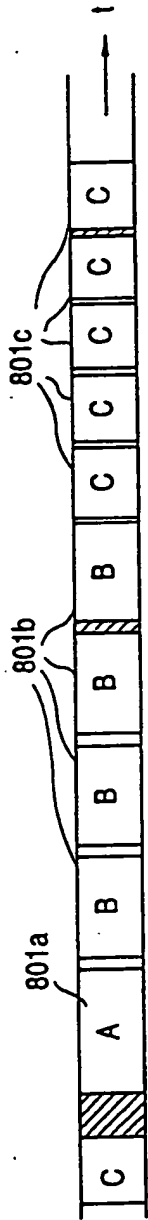


FIG. 149(b)

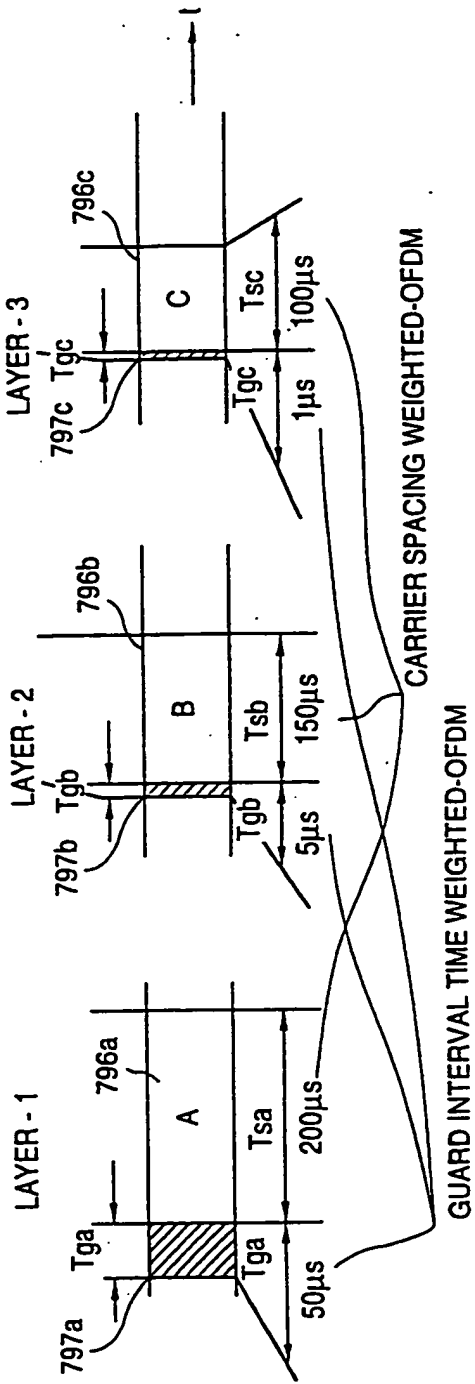


FIG. 149(c)



FIG. 150

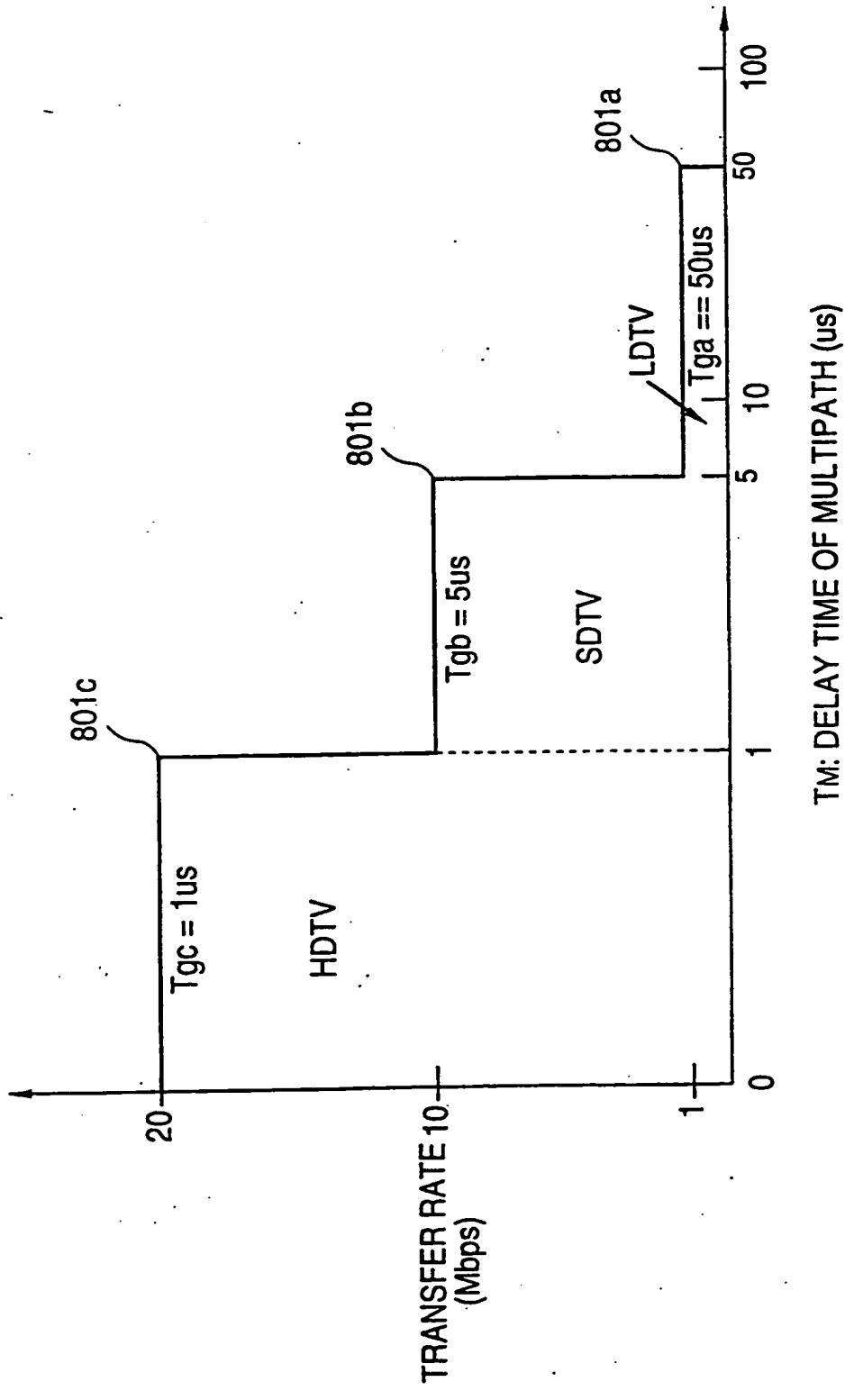


FIG. 151

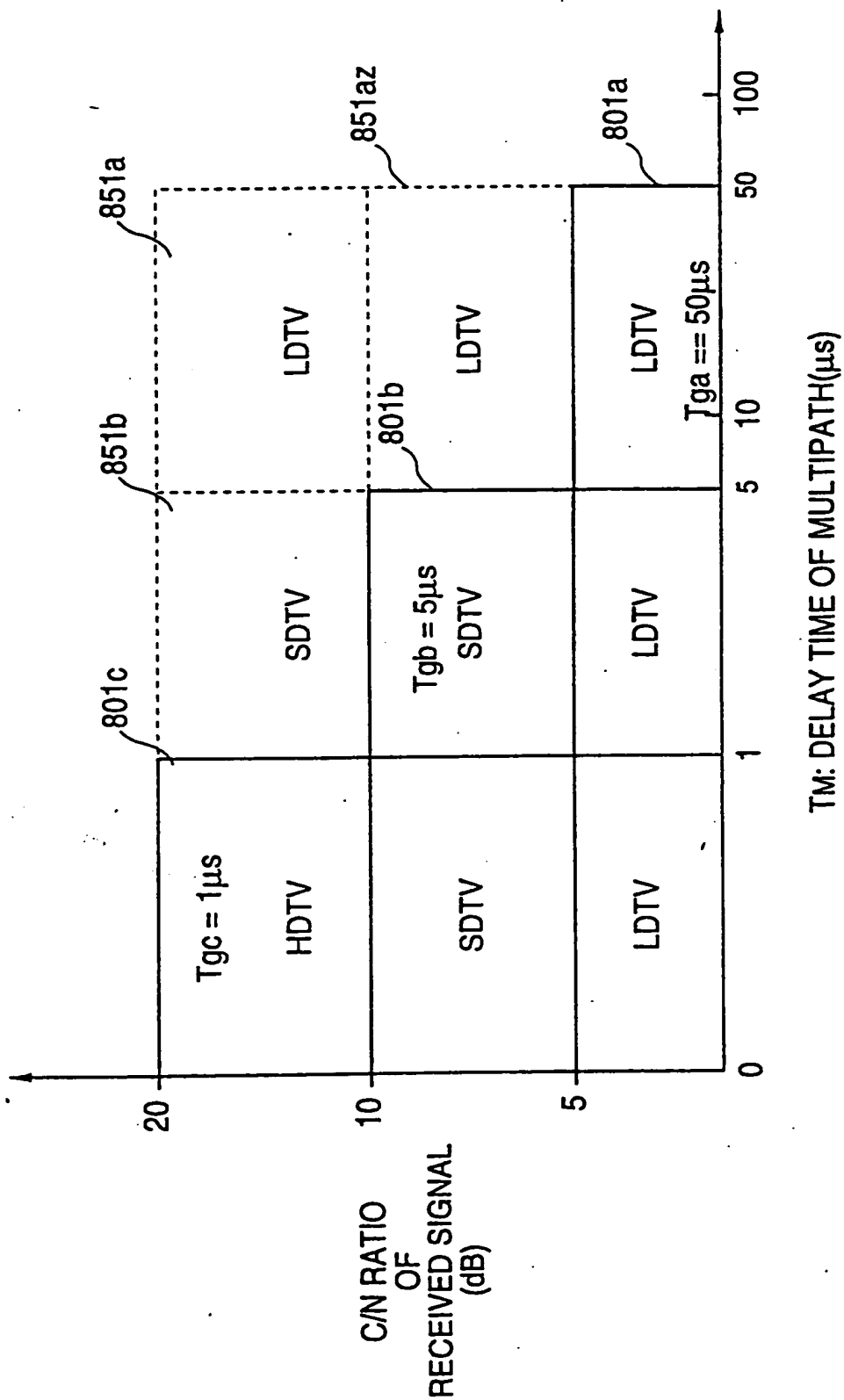




FIG. 152

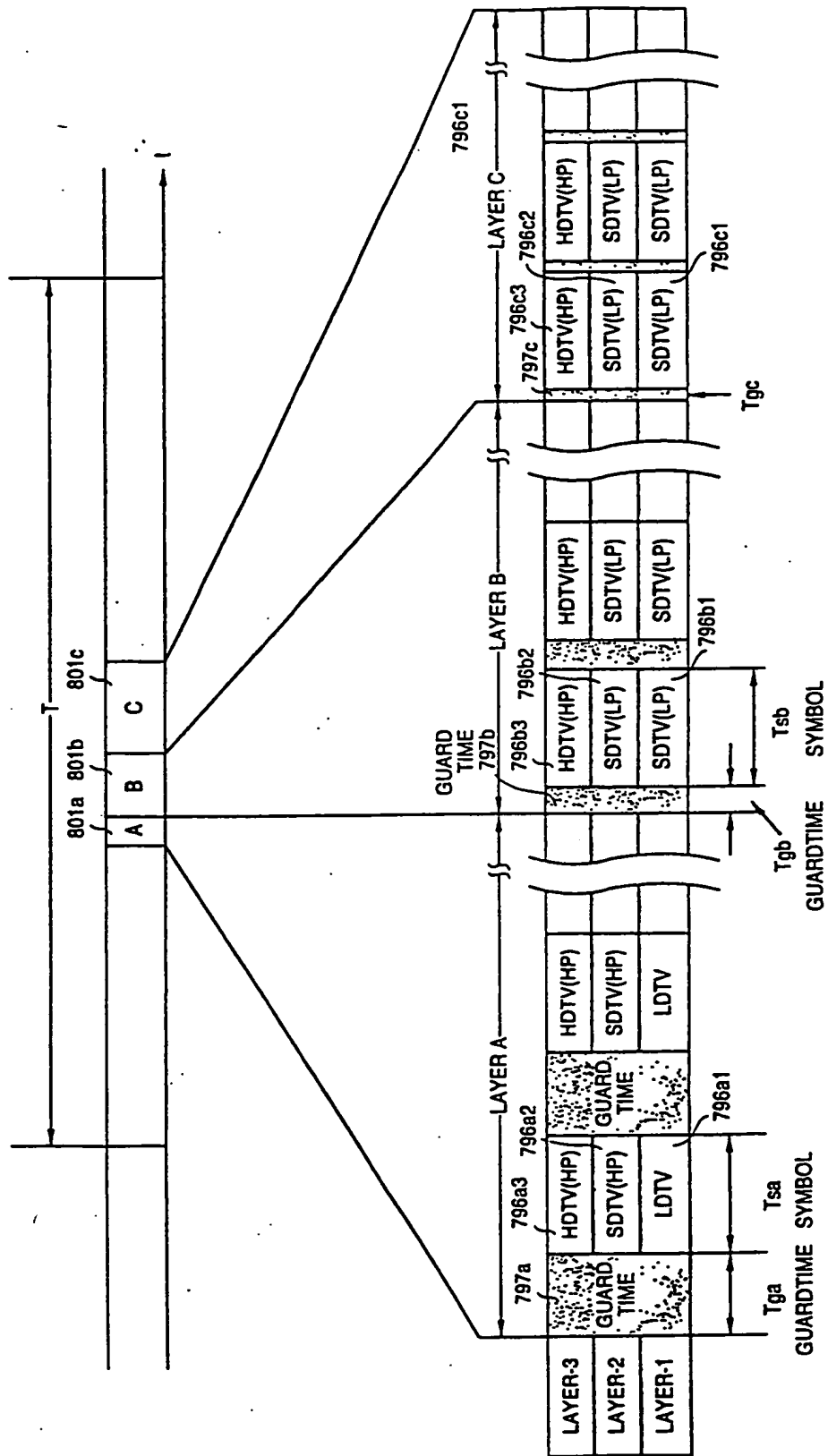
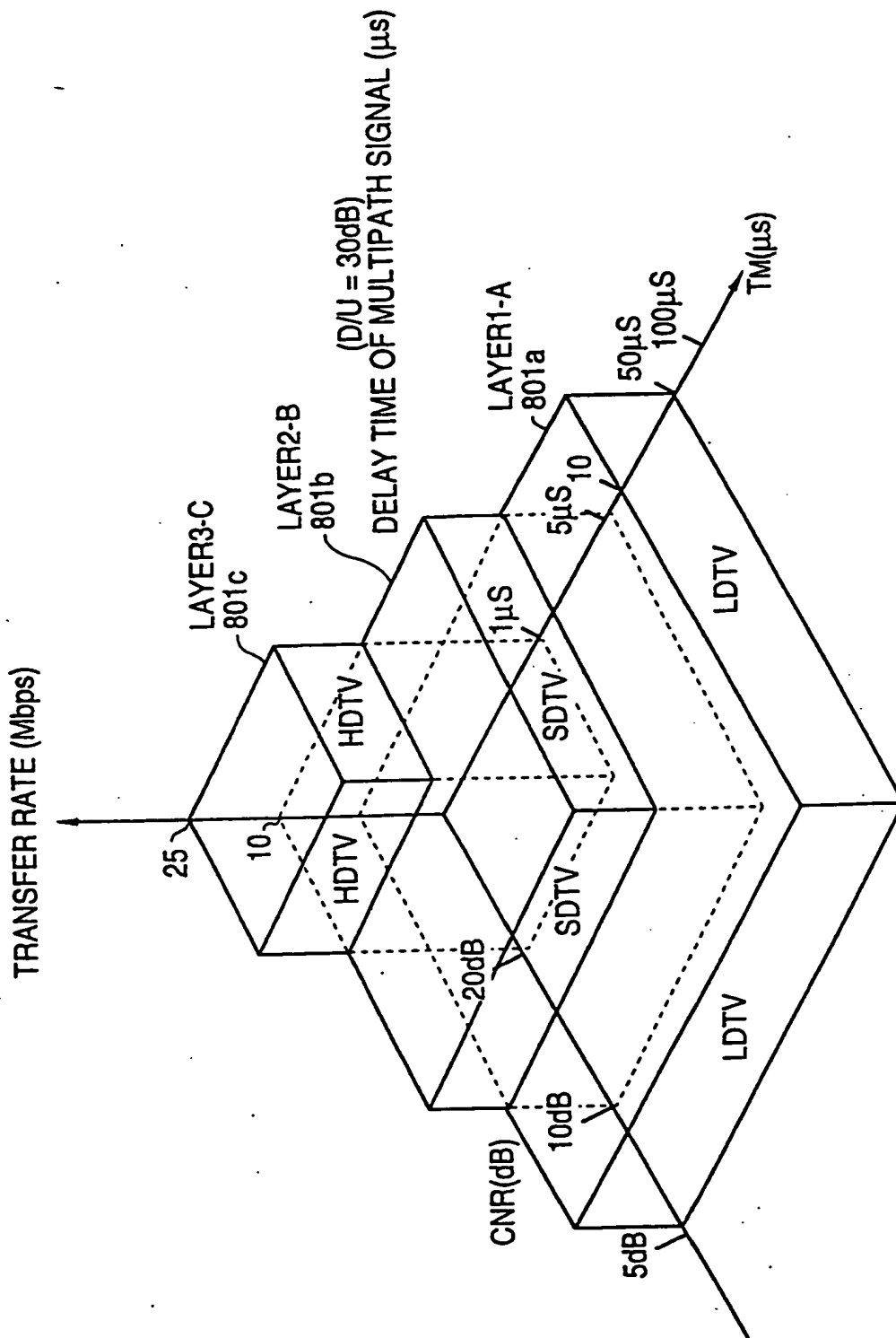
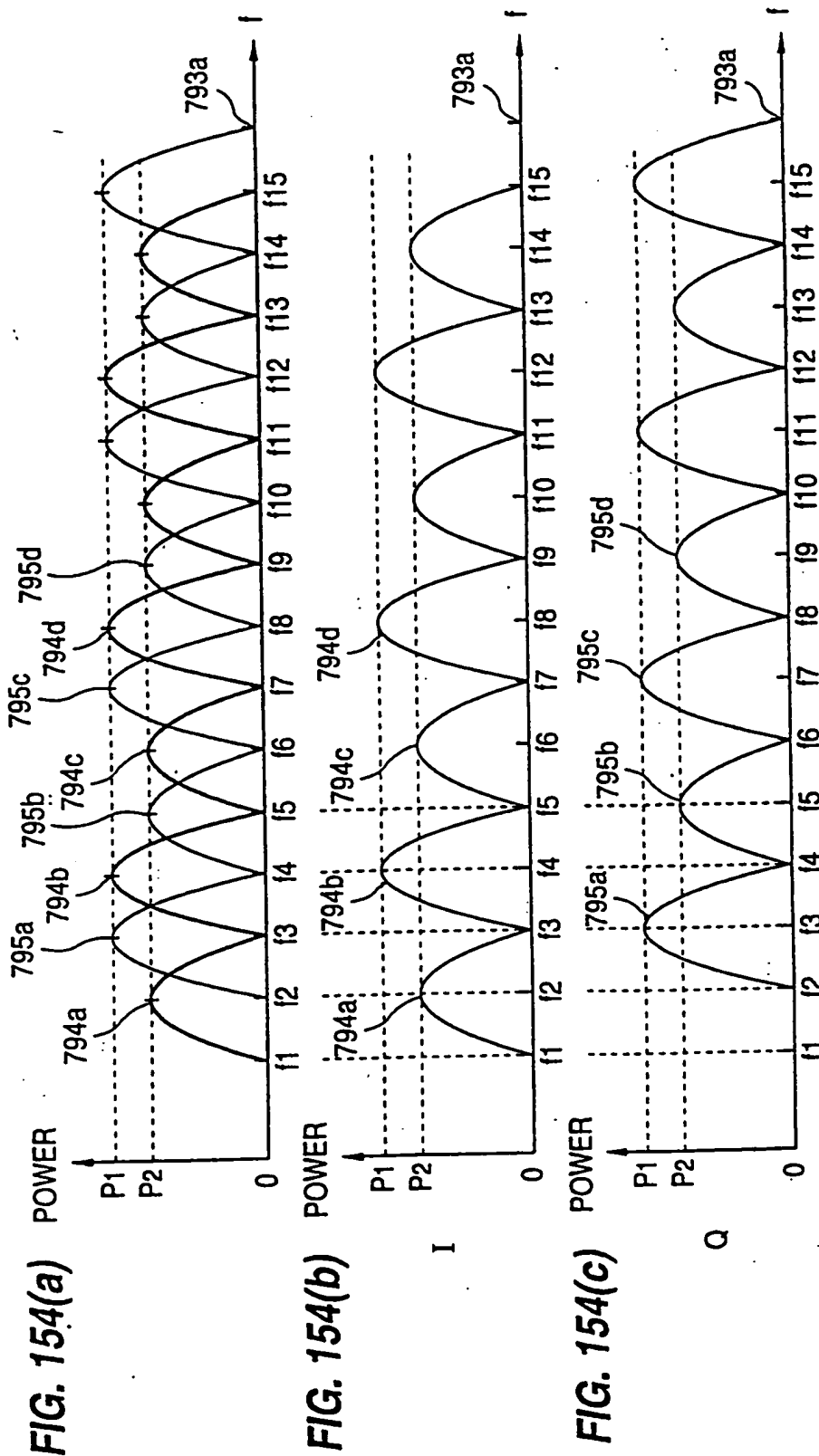


FIG. 153







OCT 24 2002

RECEIVED

U.S. Patent

Feb. 4, 1997

Sheet 154 of 178

5,600,672

FIG. 155

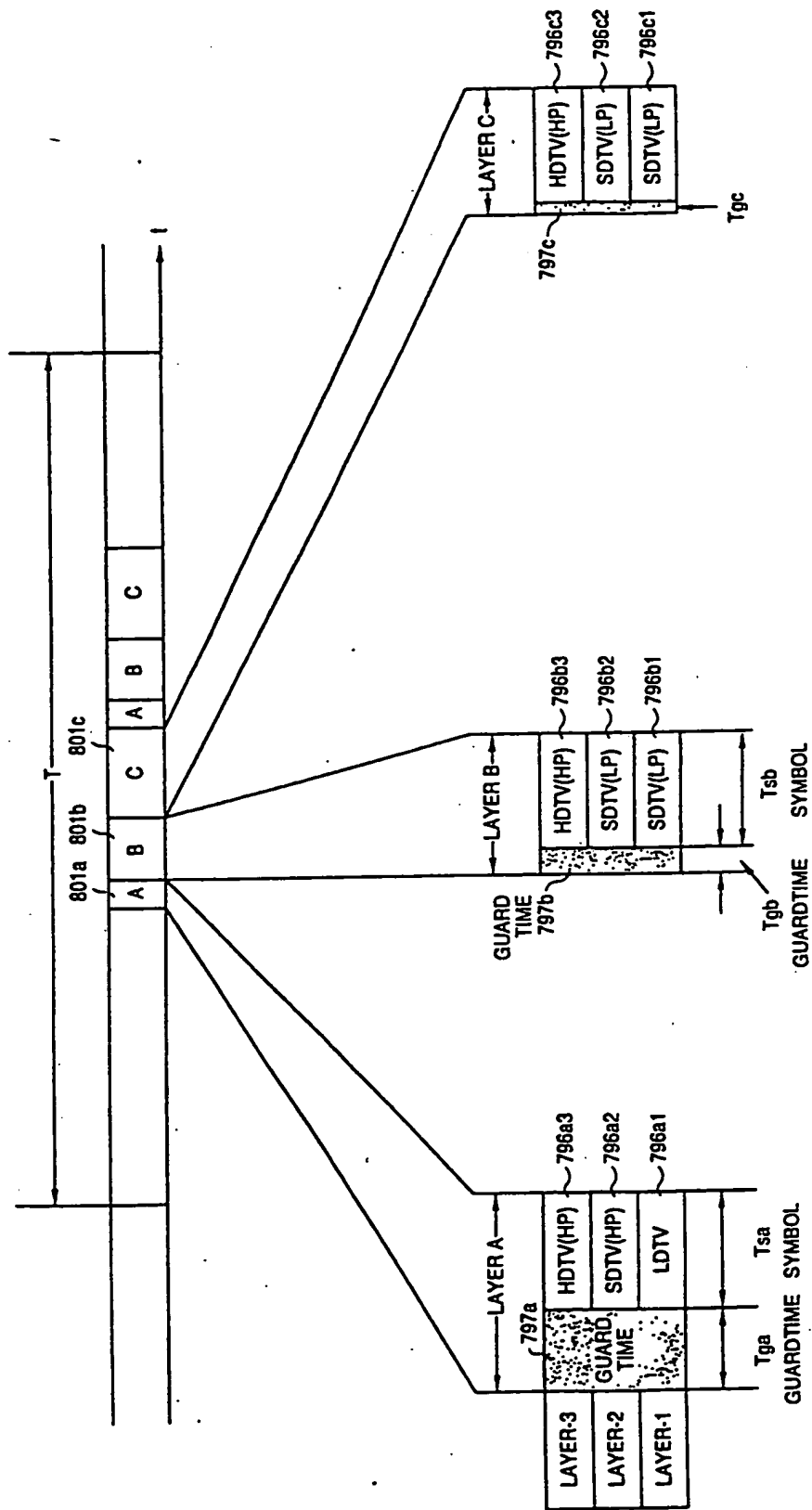


FIG. 156

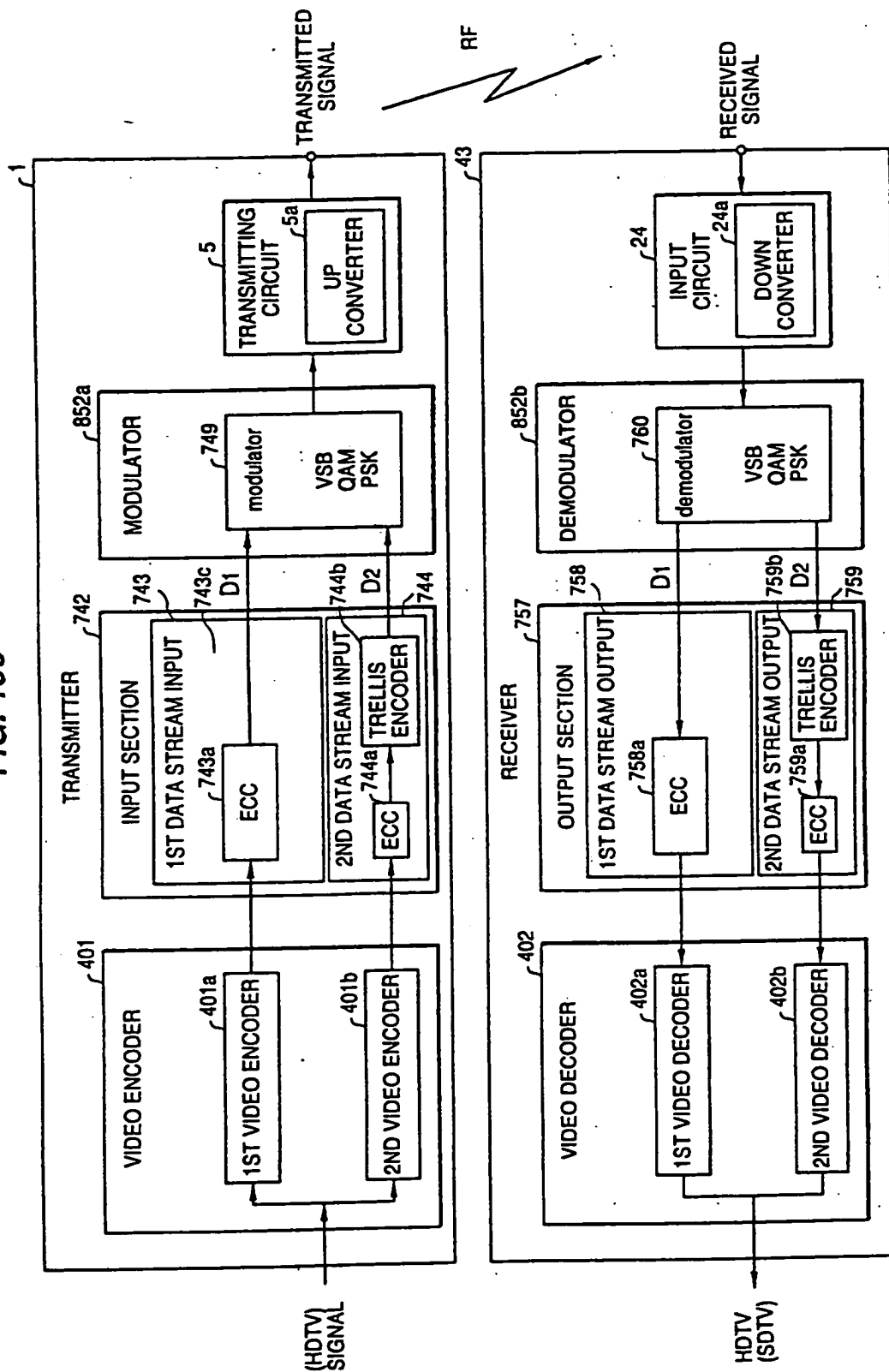




FIG. 157

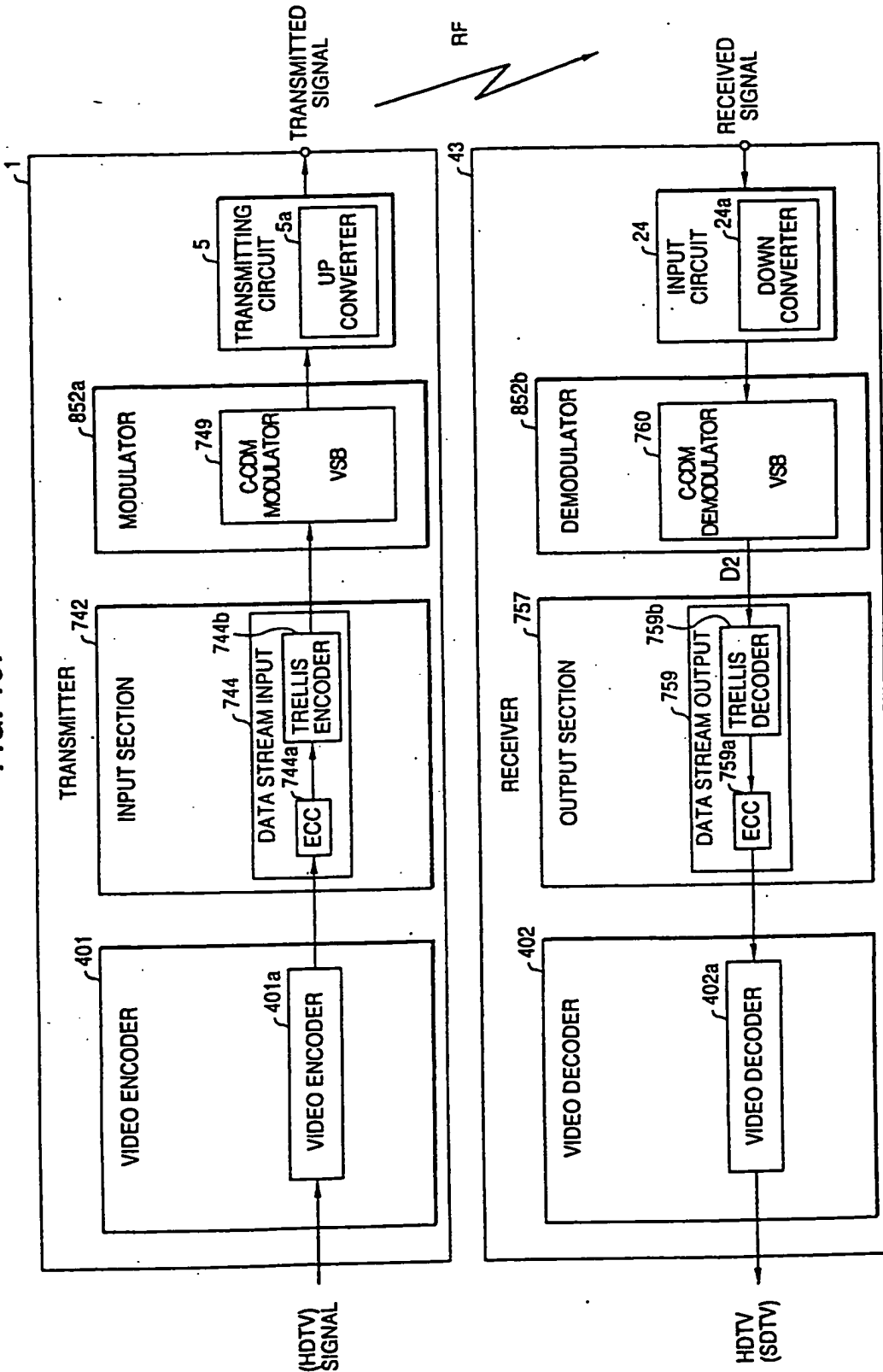
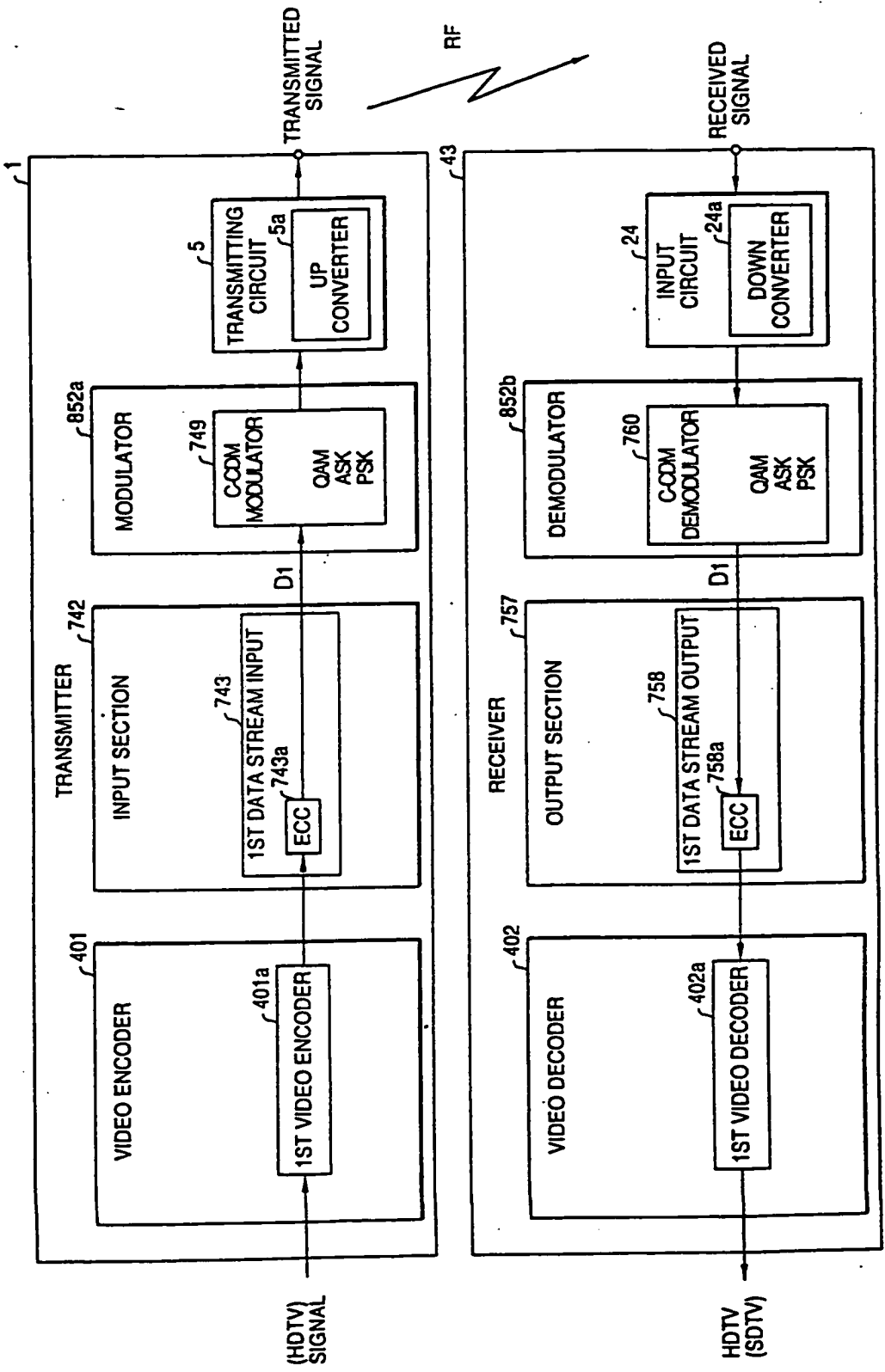




FIG. 158



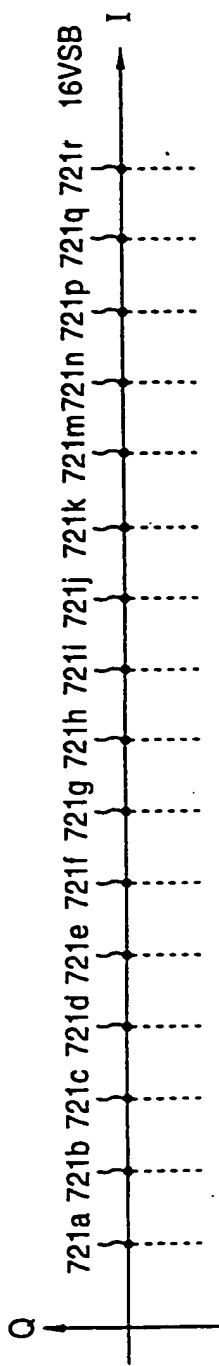


FIG. 159(a)

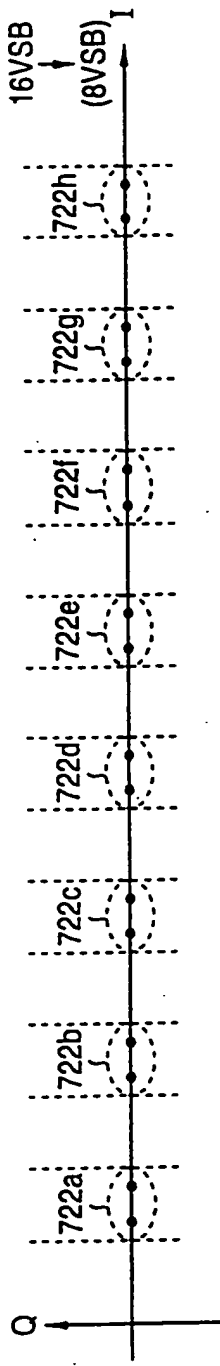


FIG. 159(b)

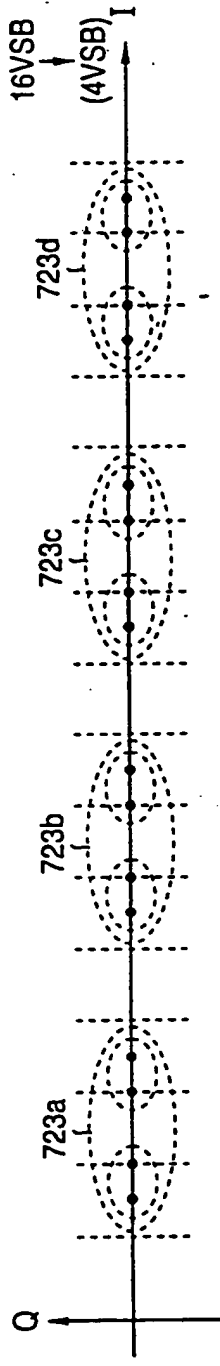


FIG. 159(c)

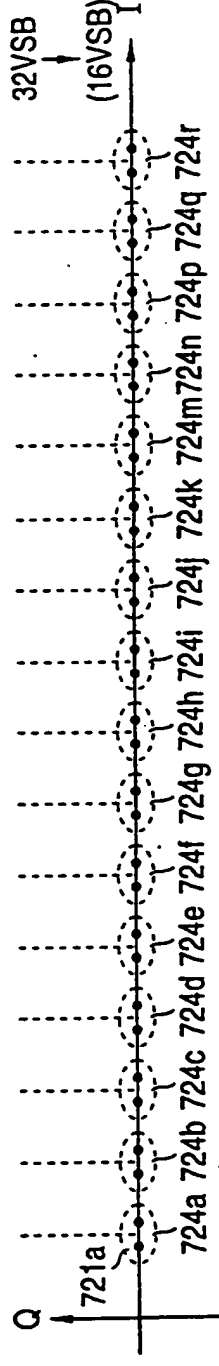


FIG. 159(d)

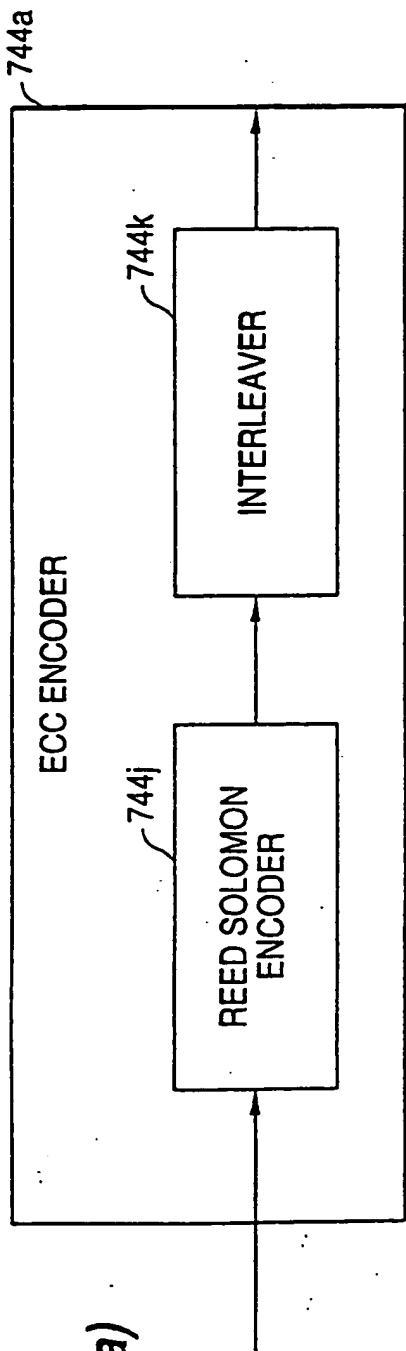


FIG. 160(a)

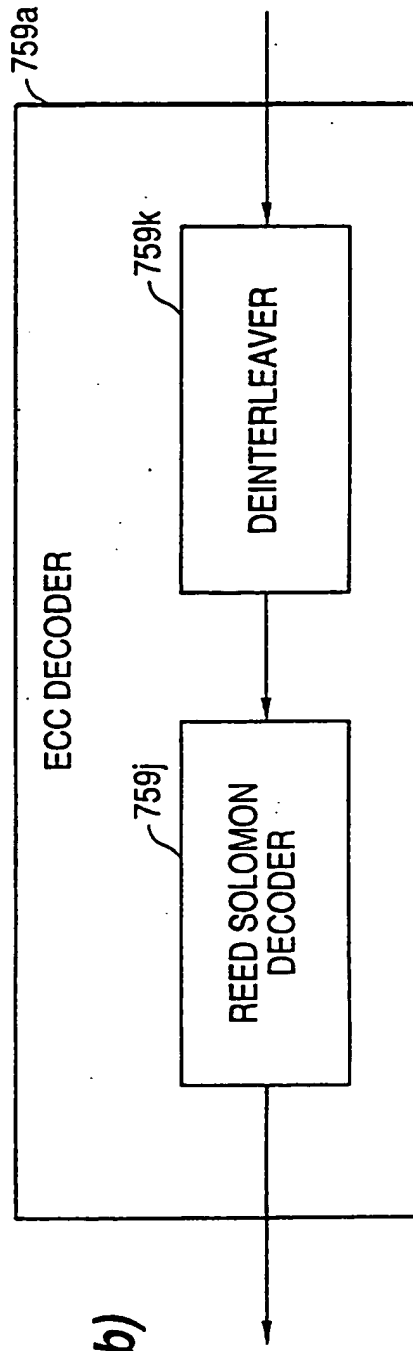
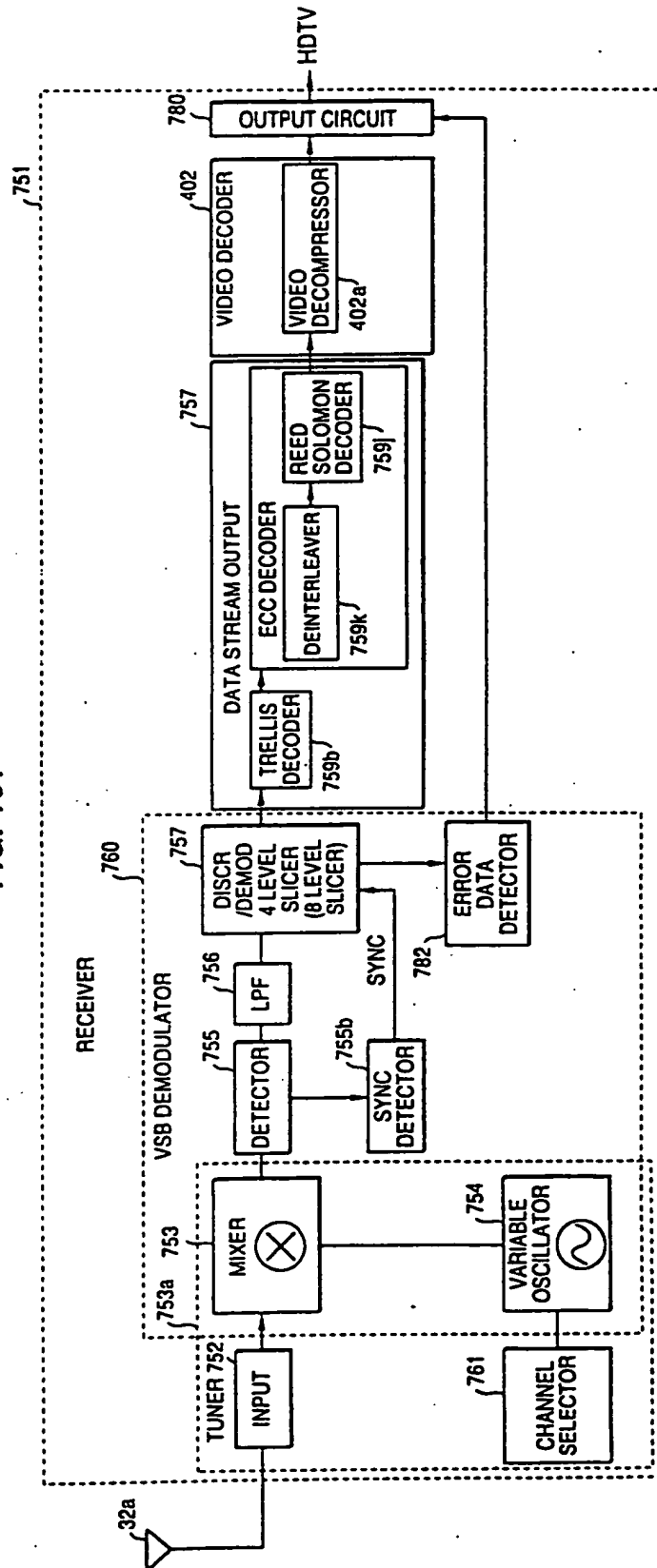


FIG. 160(b)



FIG. 161







U.S. Patent

Feb. 4, 1997

Sheet 161 of 178

5,600,672

FIG. 162

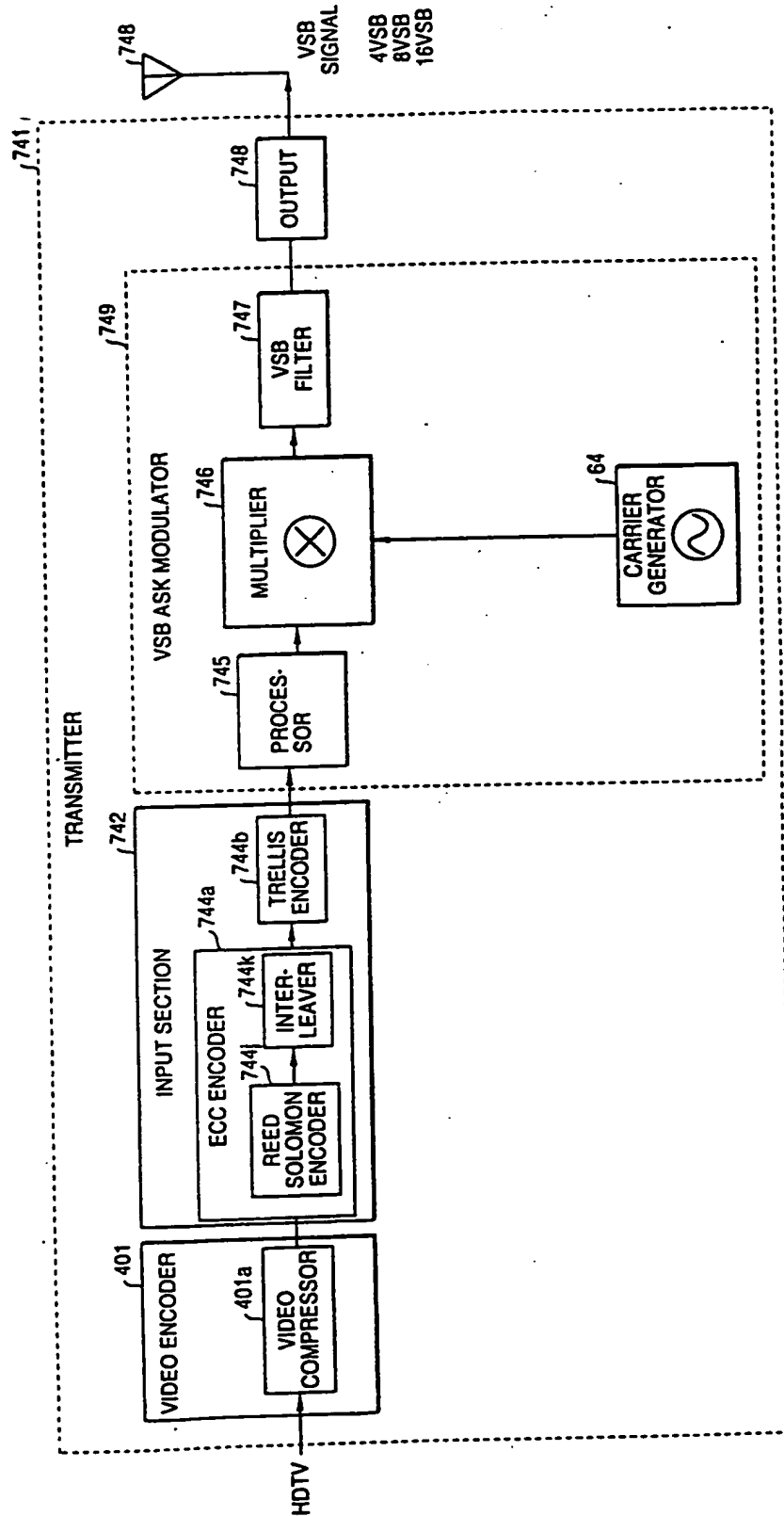




FIG. 163

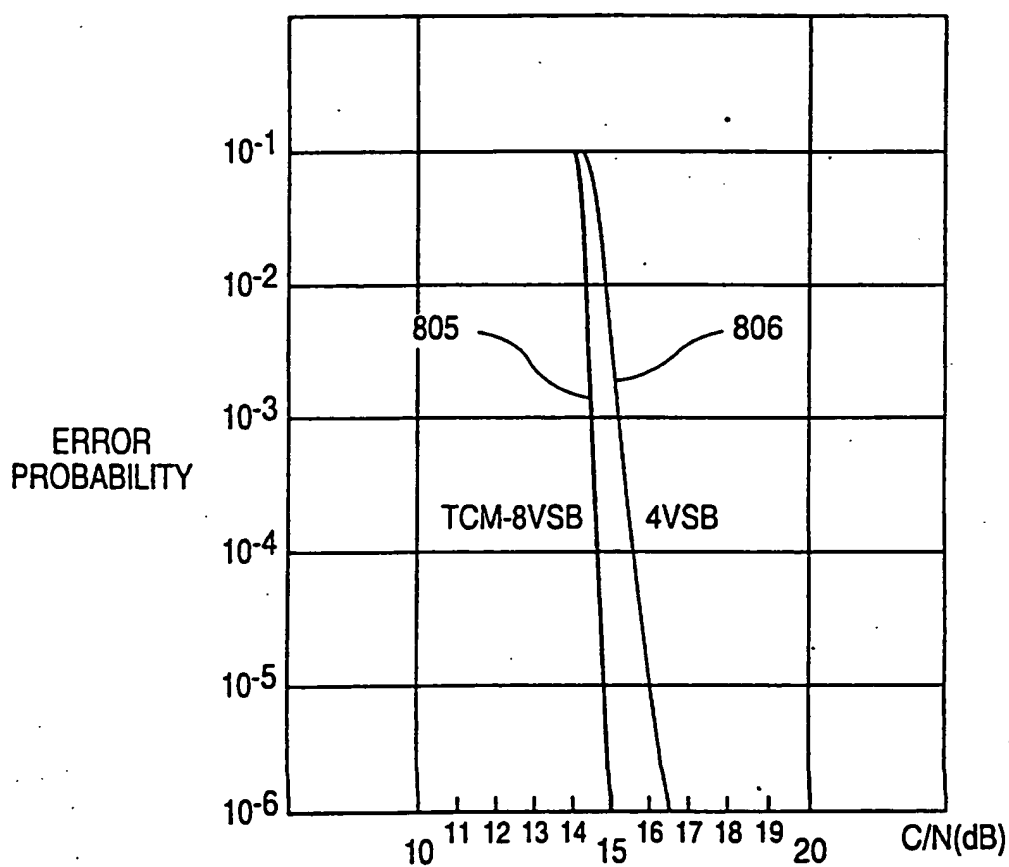




FIG. 164

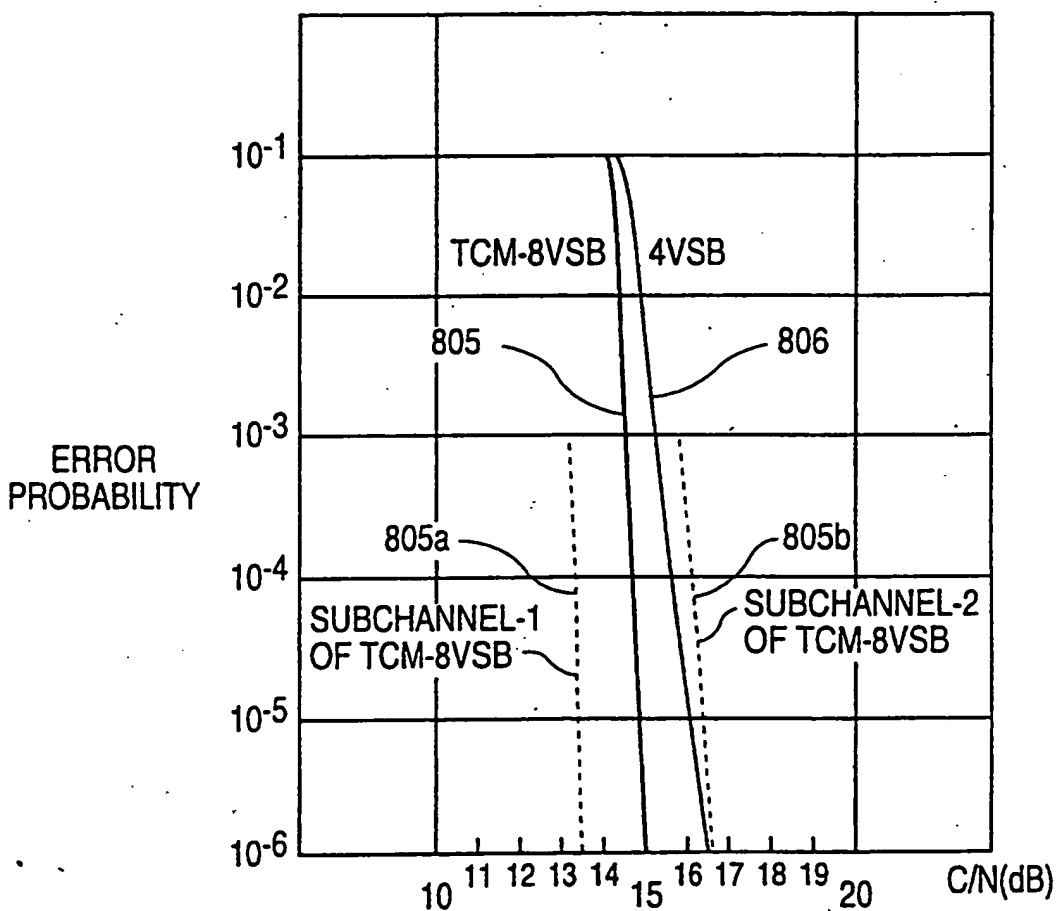




FIG. 165(a)

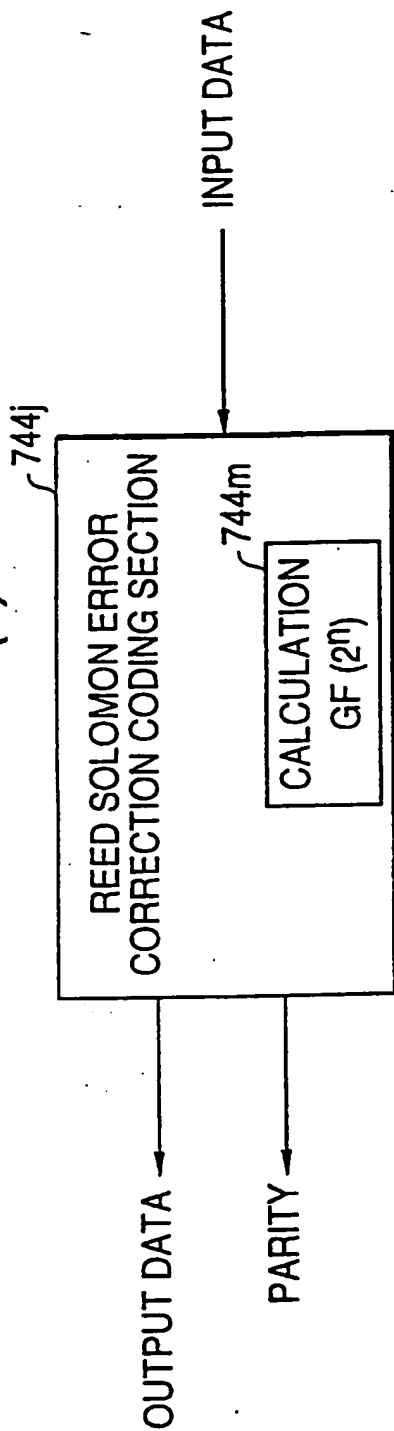


FIG. 165(b)

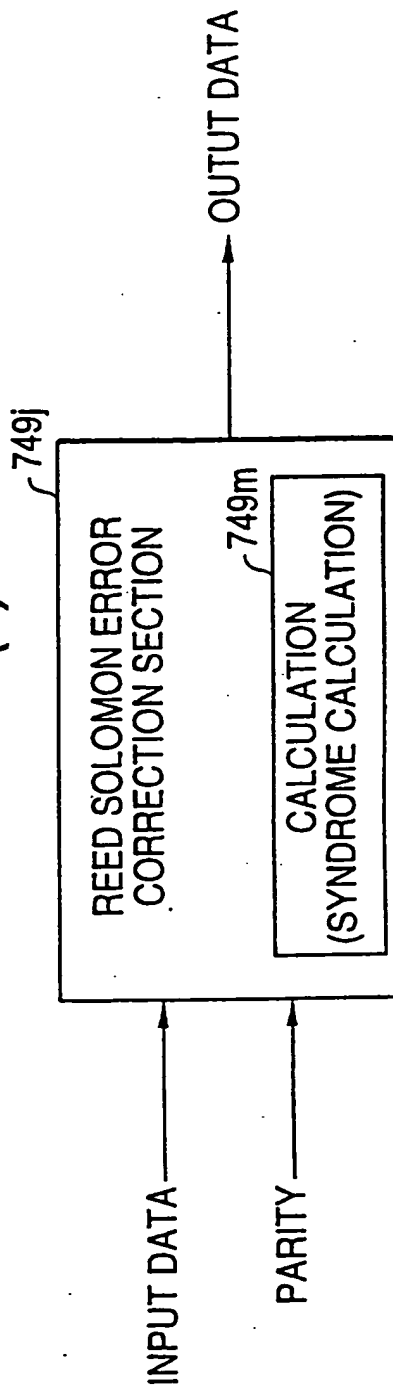




FIG. 166

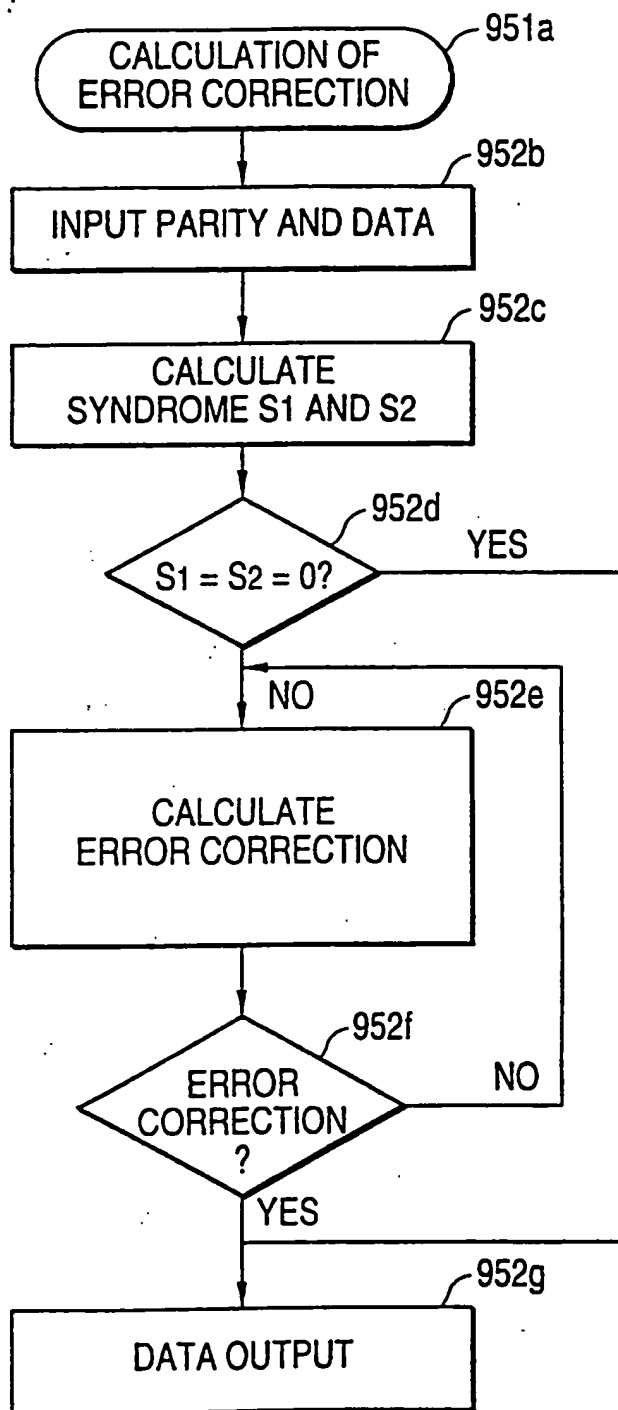




FIG. 167

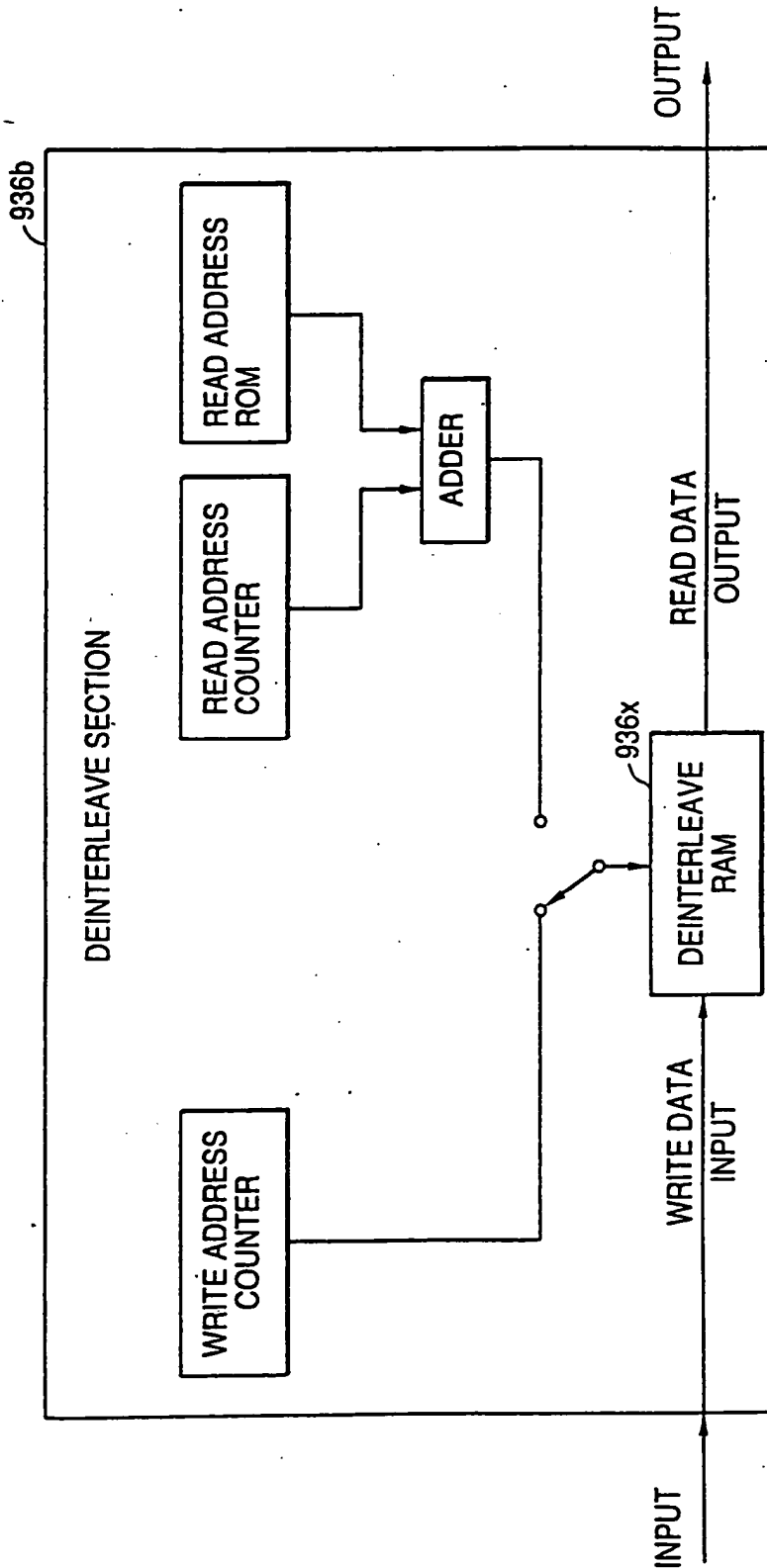




FIG. 168(a)

INTERLEAVE TABLE

| 1            | 2      | 3      | 4      | 5      | 6      | 7            |
|--------------|--------|--------|--------|--------|--------|--------------|
| DATA         |        |        |        |        |        | C2<br>PARITY |
| 1            | A1     | A2     | A3     | A4     | A5     | A6           |
| 2            | B1     | B2     | B3     | B4     |        |              |
| 3            | C1     |        |        |        |        |              |
| 4            | D1     |        |        |        |        |              |
| 5            | E1     |        |        |        |        |              |
| 6            | F1     |        |        |        |        |              |
| C1<br>PARITY | PARITY | PARITY | PARITY | PARITY | PARITY | PARITY       |

FIG. 168(b)

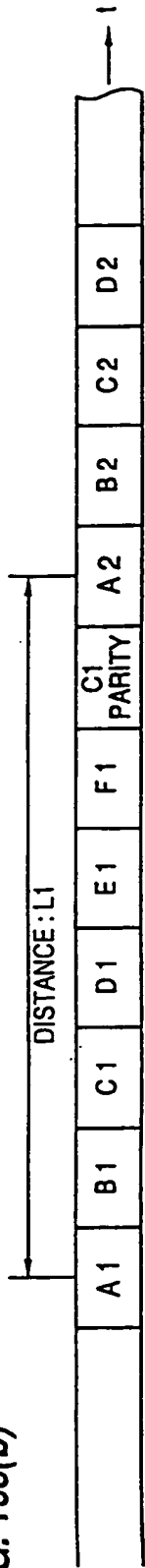




FIG. 169

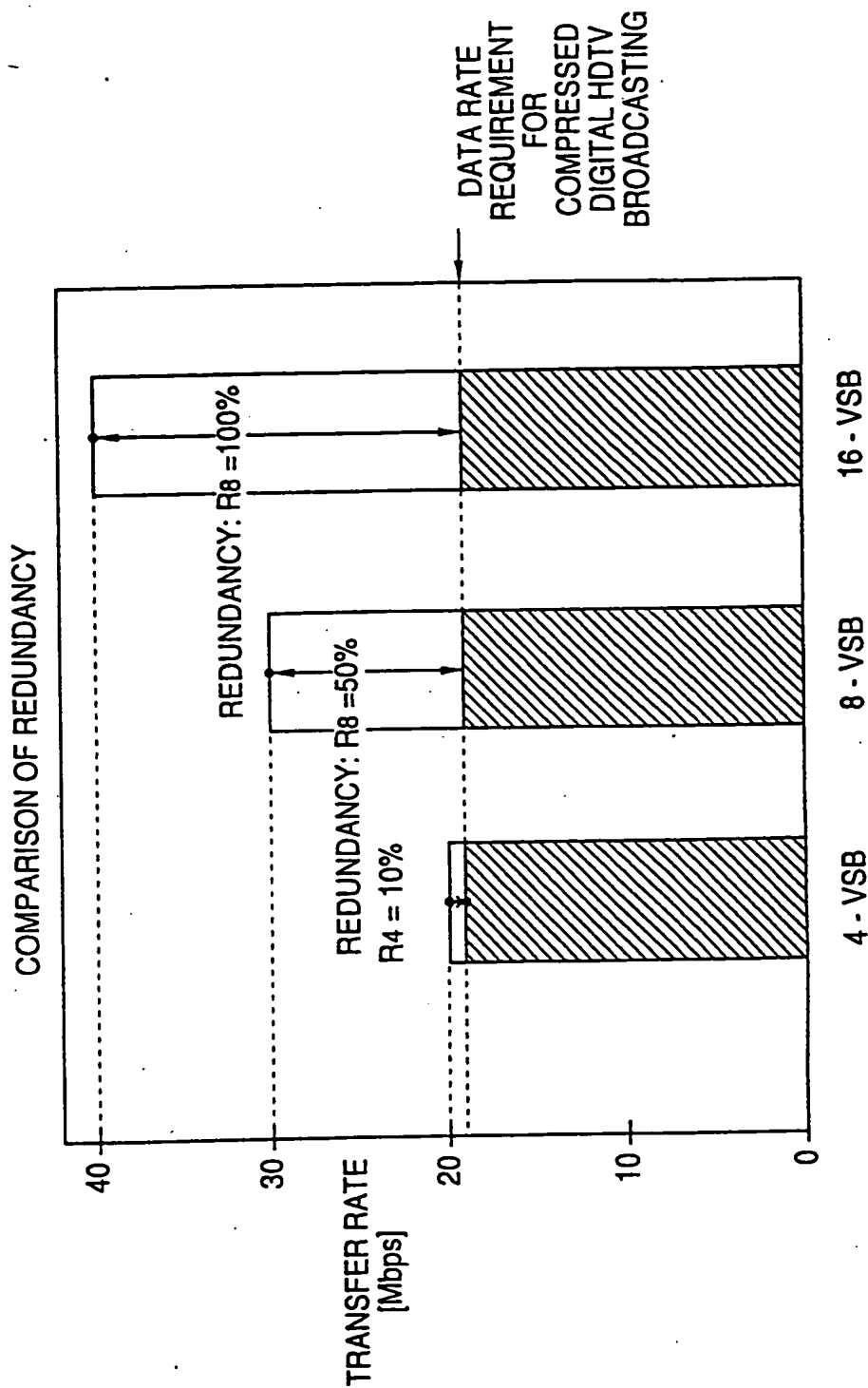






FIG. 170

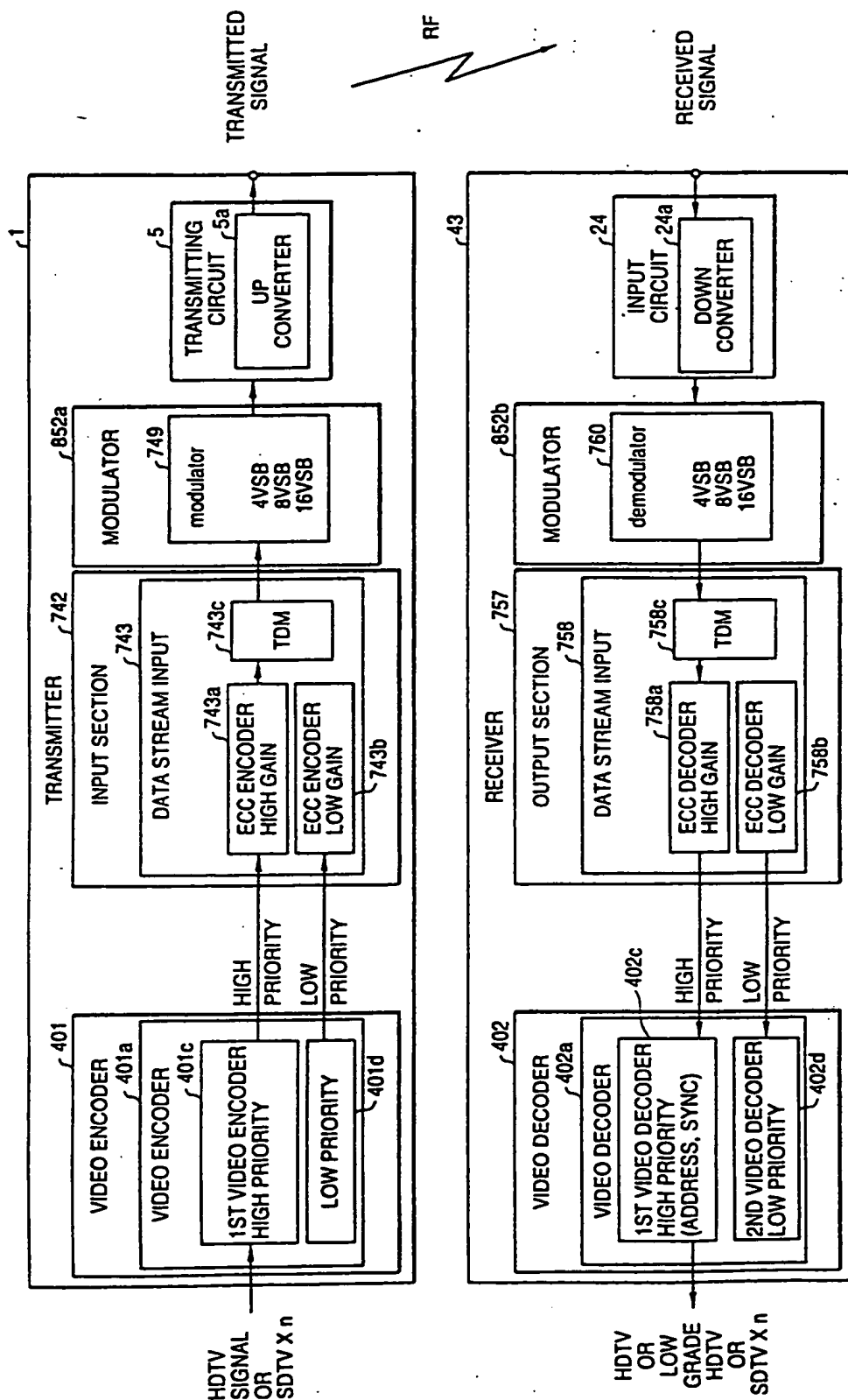




FIG. 171

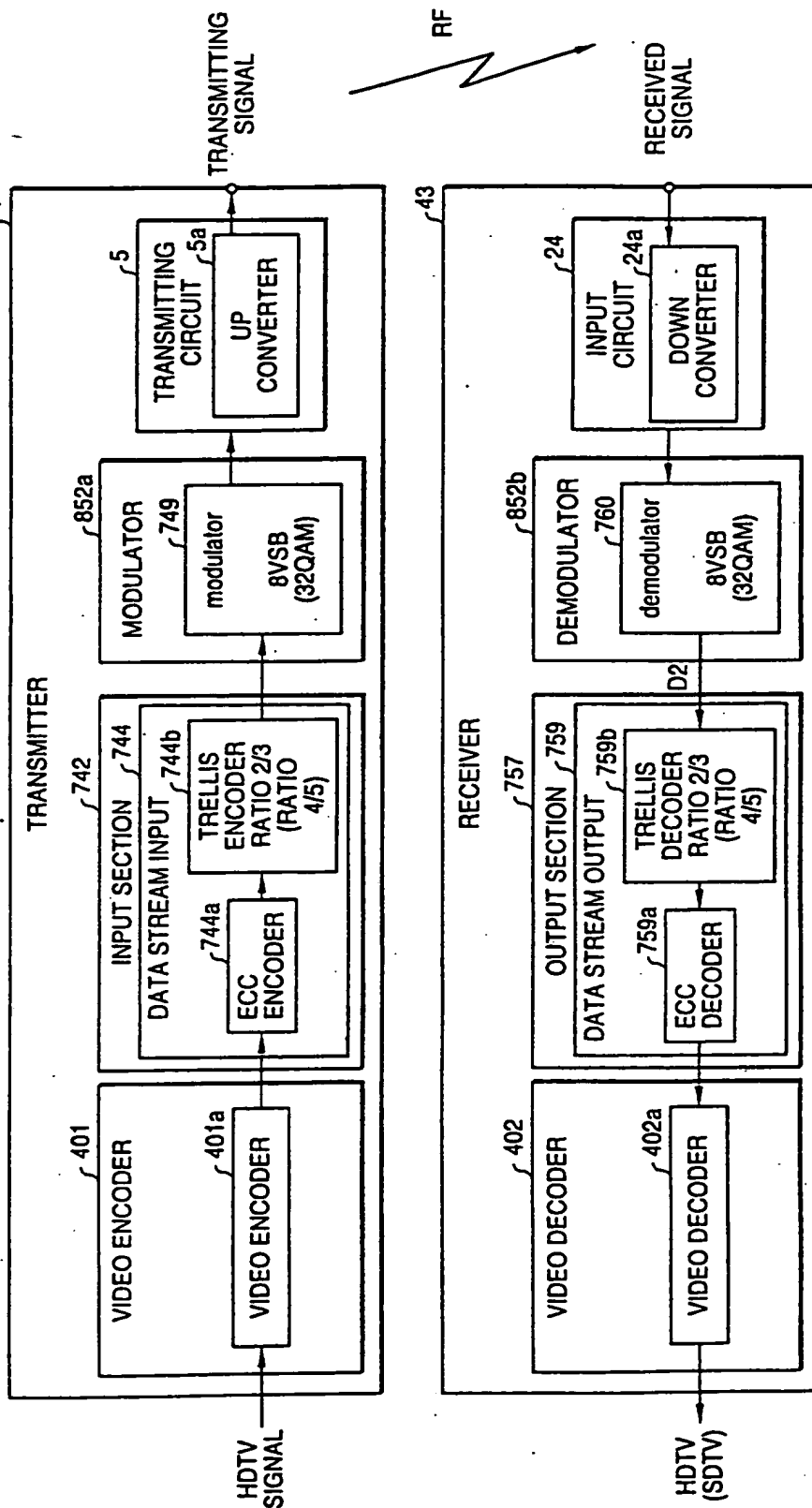


FIG. 172

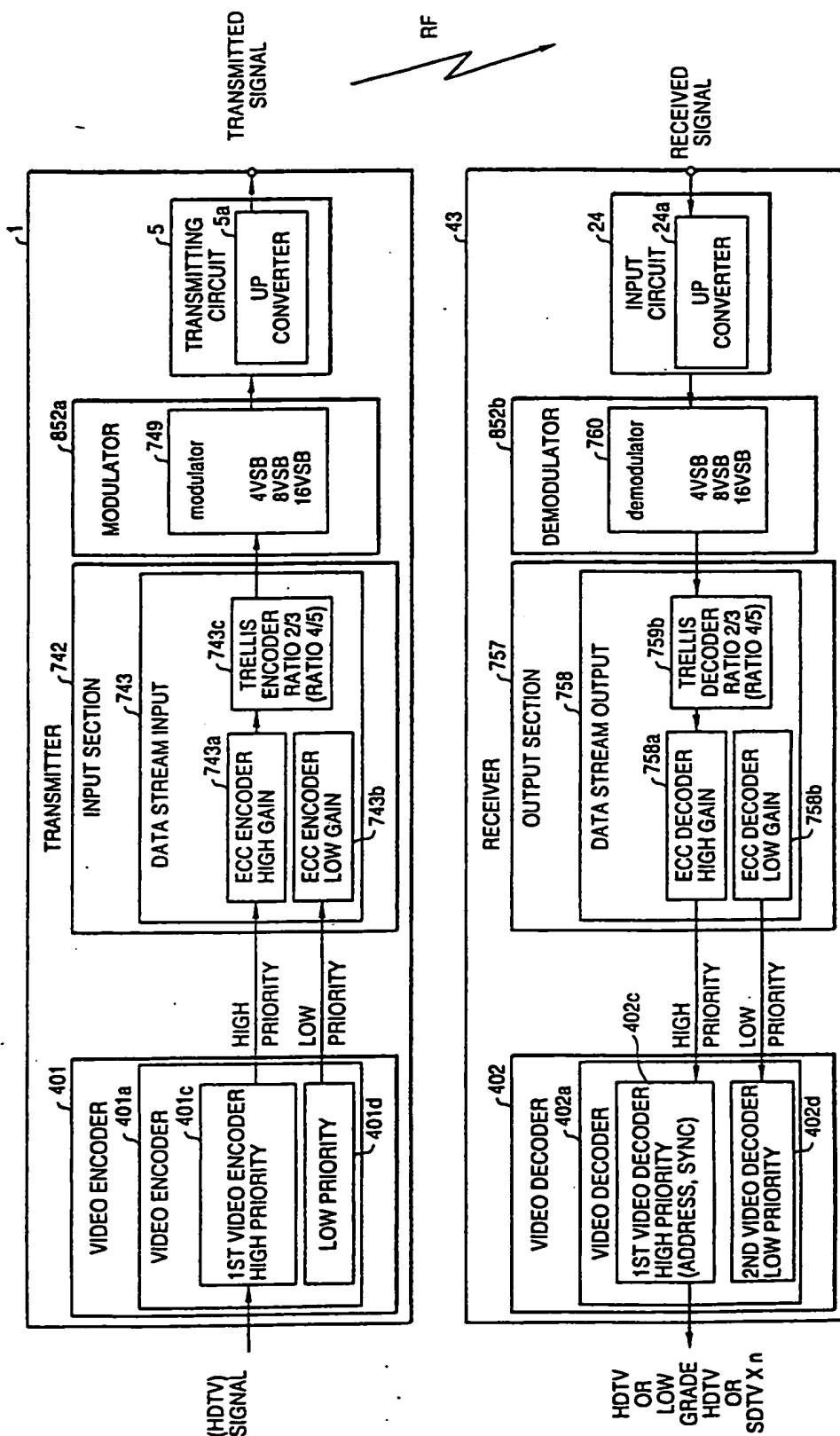


FIG. 173

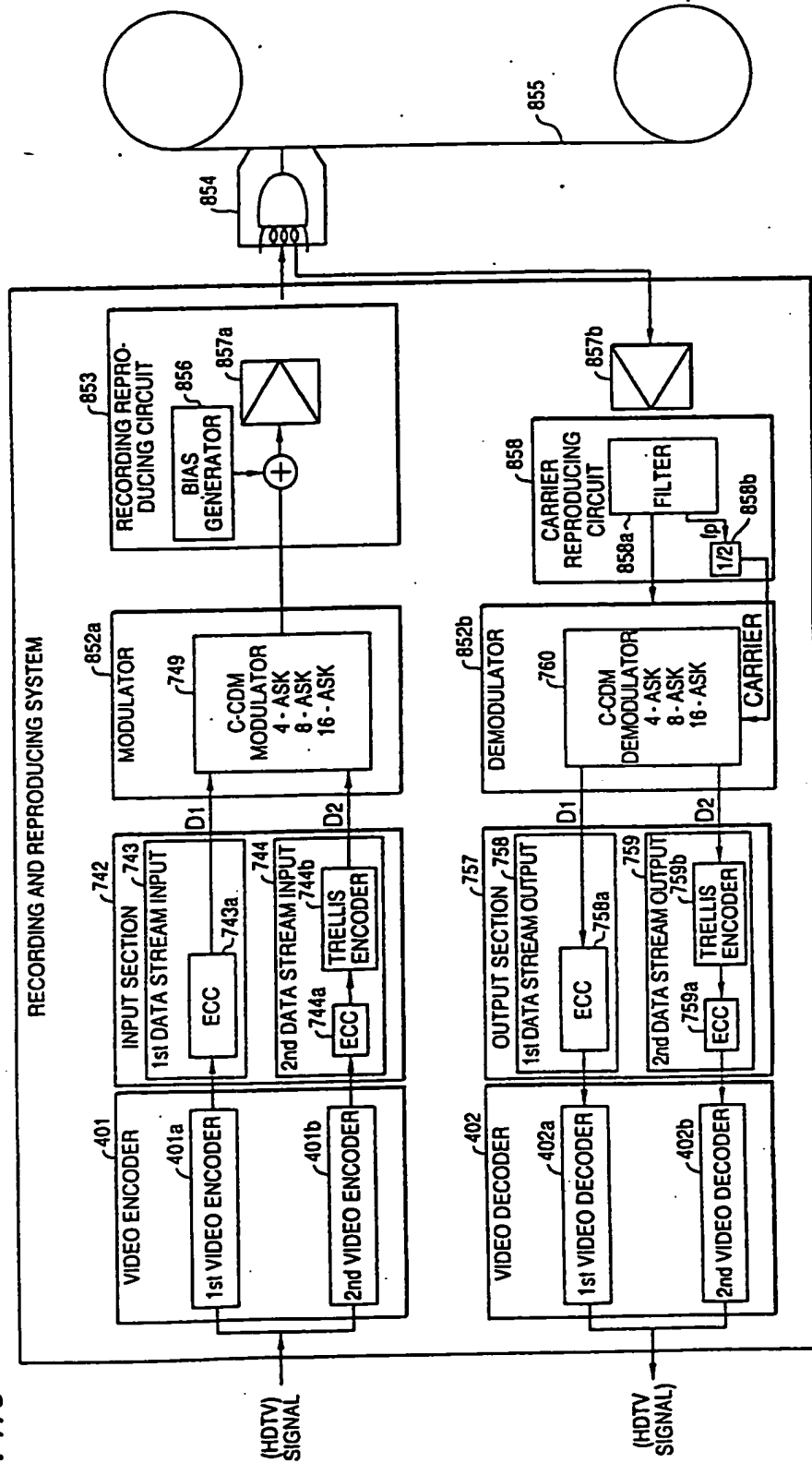




FIG. 174

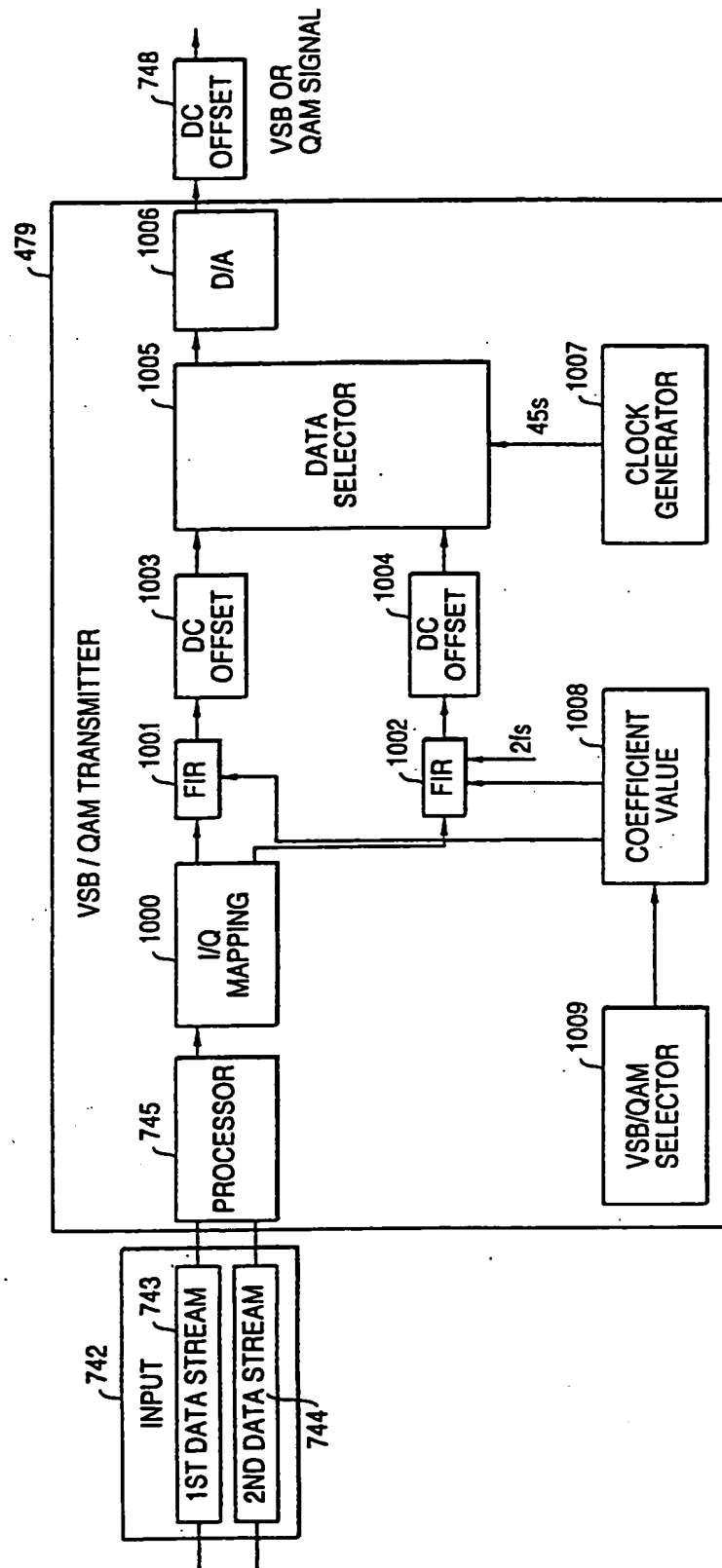




FIG. 175

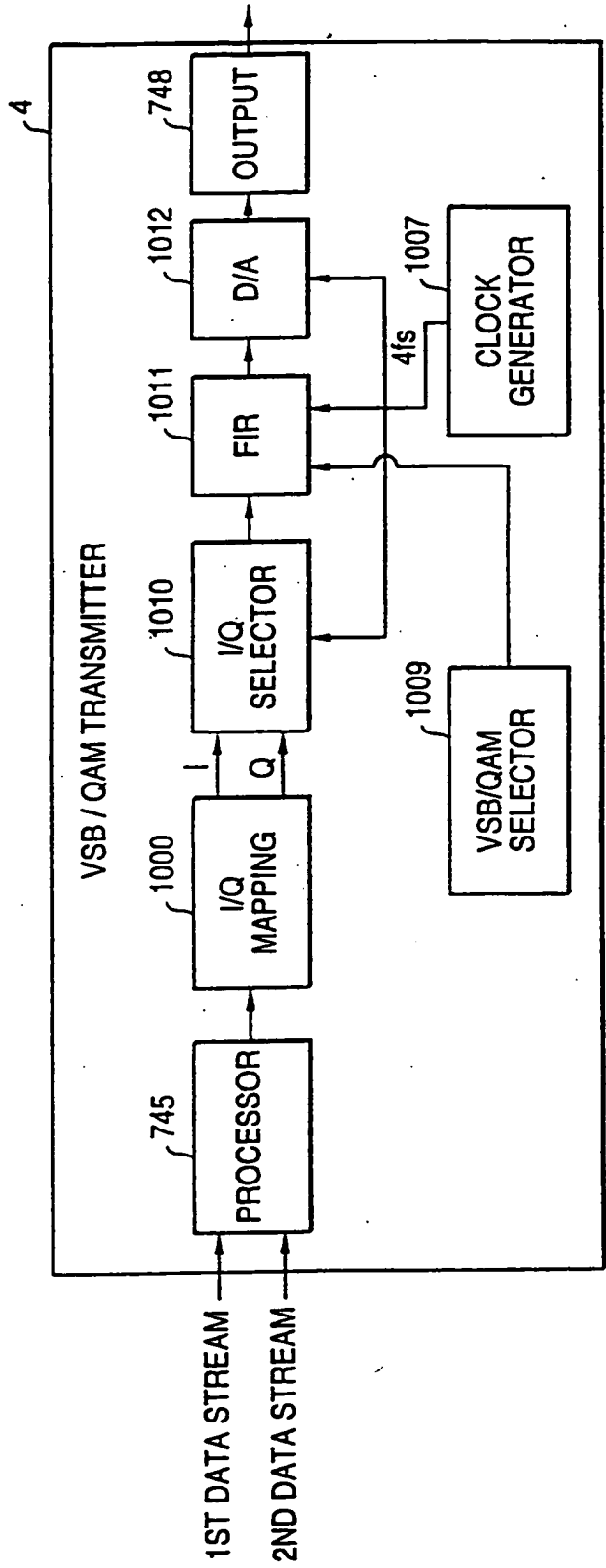




FIG. 176

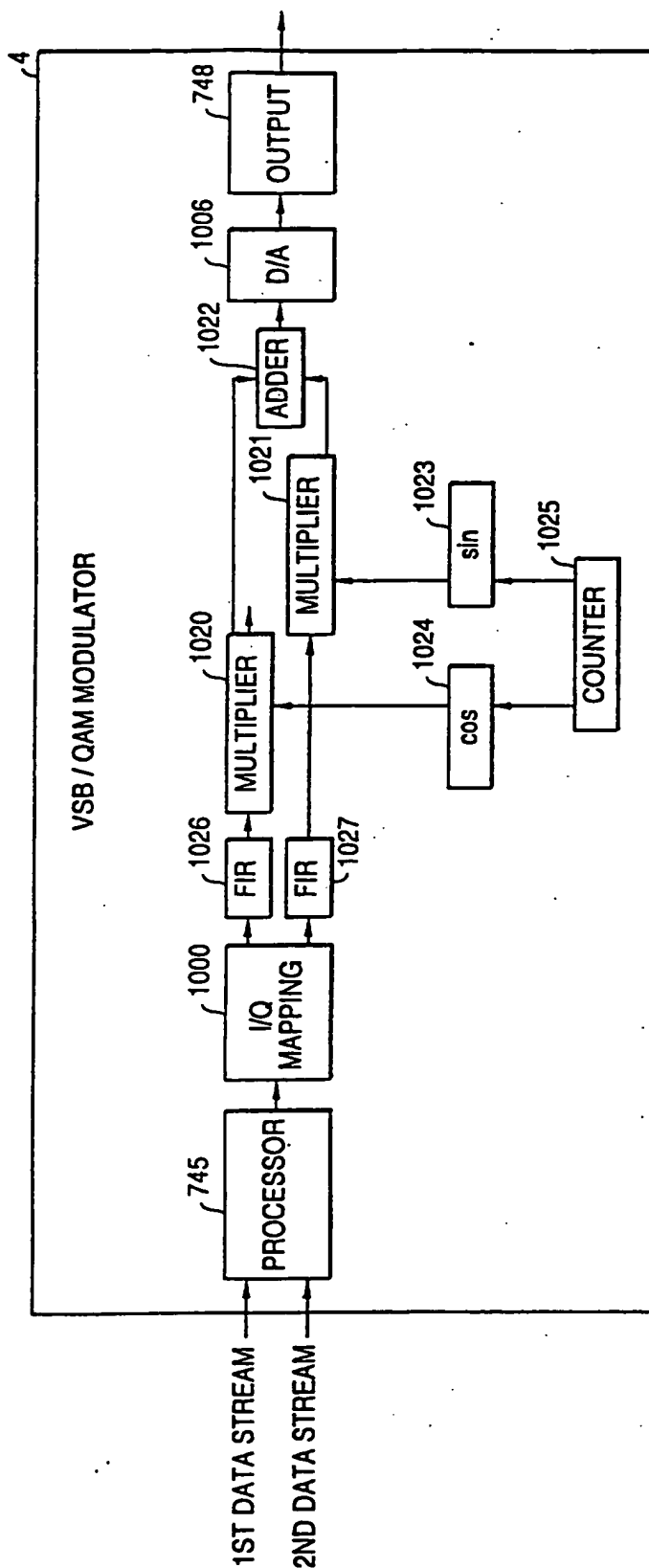




FIG. 177

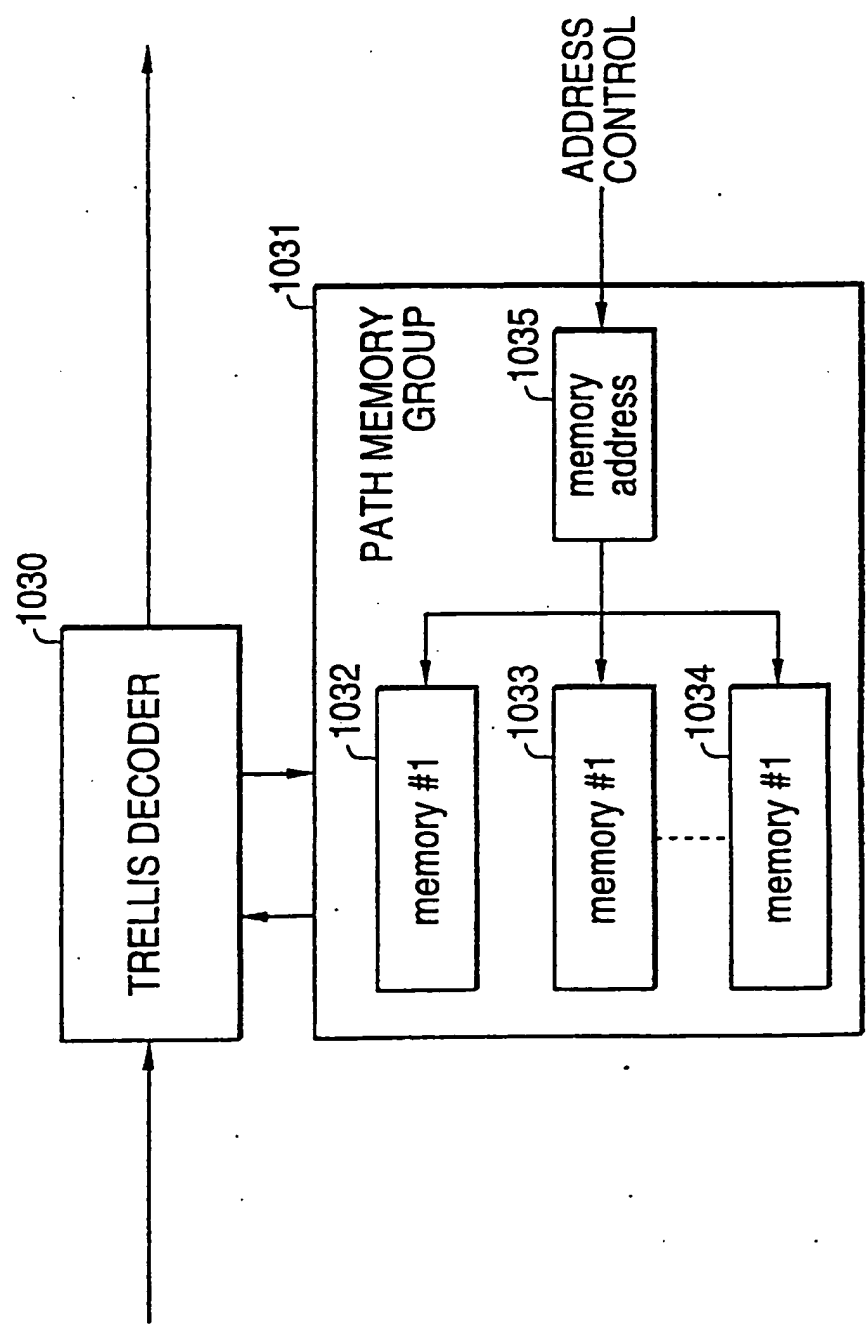






FIG. 178

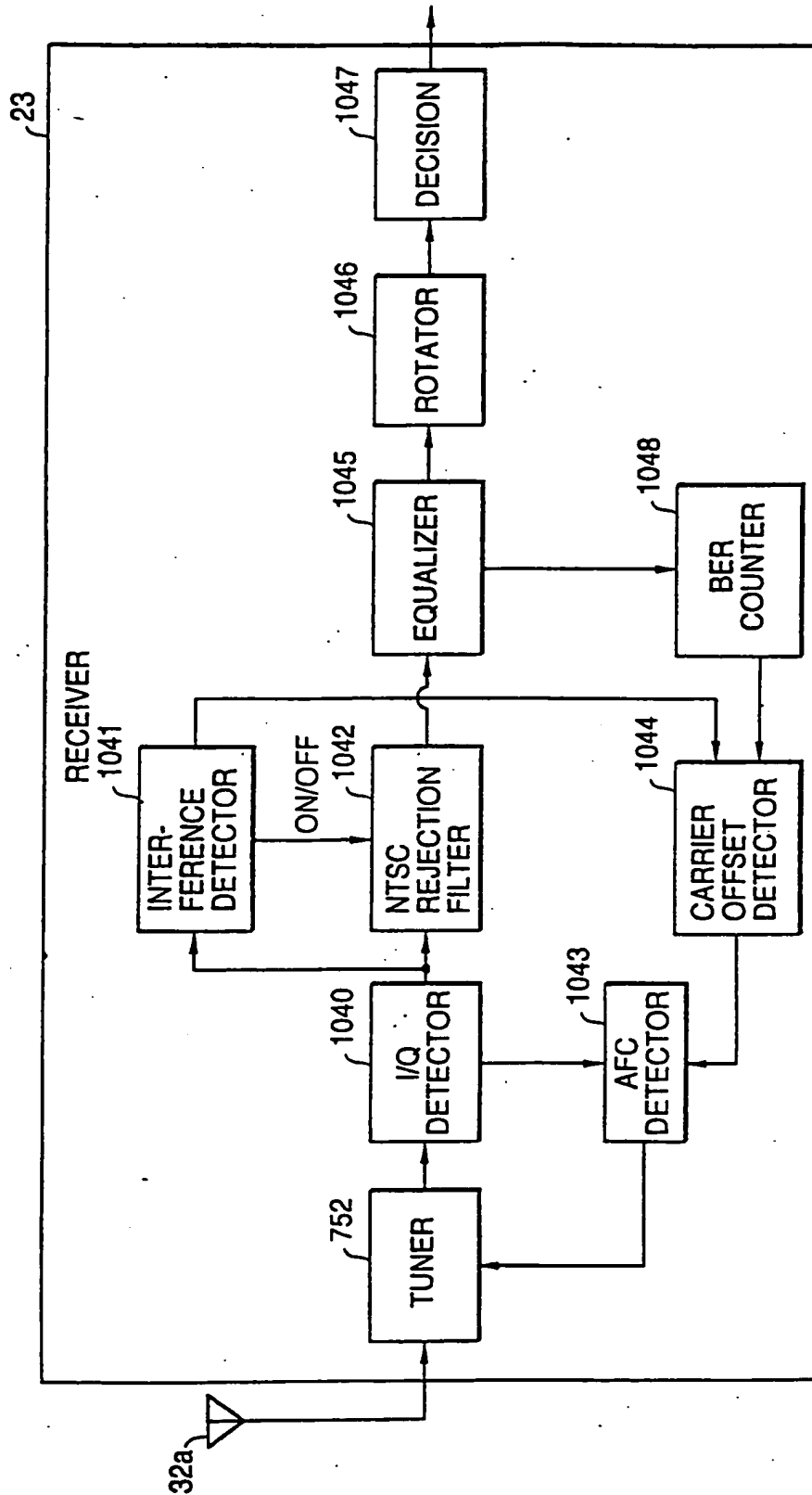




FIG. 179

